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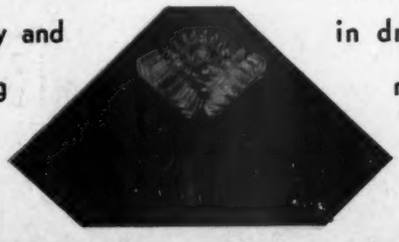

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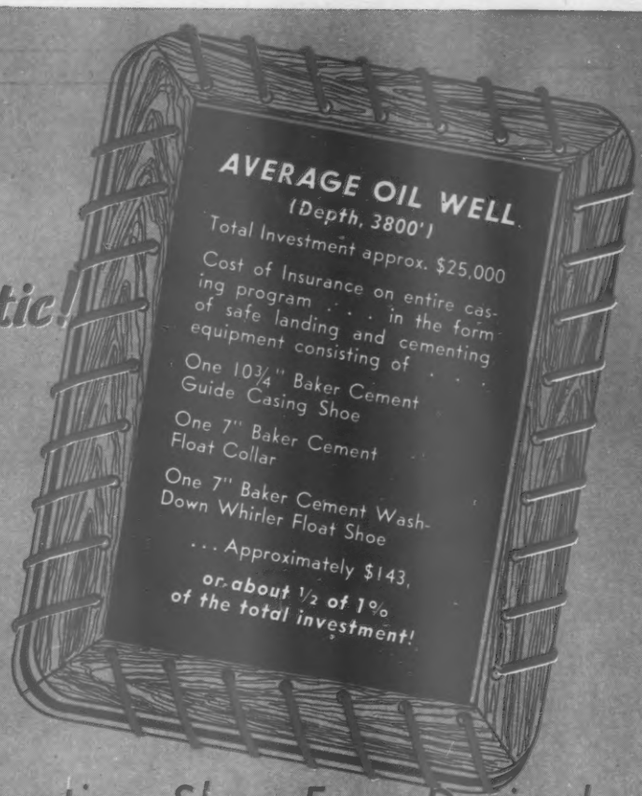
WHEN BUYING GUIDING, FLOATING AND CEMENTING EQUIPMENT . . .

Don't Forget your 'Rithmetic!

In landing and cementing casing, the cost of the necessary guiding, floating, and cementing equipment represents *only a very small fraction* of the total well investment, yet the safety and efficiency with which these units do their job have a vital bearing on the future of the well as a profitable producer.

That is why the Baker Cement Wash-Down Whirler Float Shoe and Baker Cement Float Collar combination is the choice of operators *who want to be sure of safely landing* and then *efficiently cementing* their casing string. With Baker units nothing is left to chance . . . for Baker Shoes and Collars are designed, engineered, and manufactured to do THREE THINGS: (1) Land casing safely; (2) cement it efficiently; and (3) drill out easily.


AVERAGE OIL WELL
(Depth, 3800')
Total Investment approx. $25,000
Cost of Insurance on entire casing program . . . in the form of safe landing and cementing equipment consisting of . . .
One 10¾" Baker Cement Guide Casing Shoe
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One 7" Baker Cement Wash-Down Whirler Float Shoe
. . . Approximately $143, or about ½ of 1% of the total investment!

The Most Efficient Cementing Shoe Ever Devised

BAKER CEMENT WASH-DOWN WHIRLER FLOAT SHOE

Here's Why!

Product No. 120

BAKER CEMENT WASH-DOWN WHIRLER *FLOAT SHOE

*(*The Baker Wash-Down principle is also available in a Guide Shoe)*

(1) THREADED CONNECTION FURNISHED TO FIT ANY TYPE CASING. Baker Floating Units can be furnished with threaded connection to fit the specifications of your casing. (Float collars can be furnished with both "female" and "male and female" threaded connections.) Manufacturing precision assures thread uniformity and accuracy.

(2) AMPLE STRENGTH. The seamless steel casing shoe into which the concrete plug and Plastic BALL-TYPE Valve Assembly are securely anchored provides a unit that has the STRENGTH to float the longest and heaviest string of casing with an ample factor of SAFETY.

(3) POSITIVE, LEAK-PROOF BACK-PRESSURE VALVE. The buoyant Plastic BALL-TYPE Back-Pressure Valve floats in the cement slurry or rotary mud and instantly forms a leak-proof double seal against a narrow, tough rubber ring (backed by Plastic and concrete) at the slightest reversal of pressure. Here is Valve Efficiency at its best.

(4) AMPLE CIRCULATION AREAS. The correctly designed, streamlined Valve Assembly provides passageways ample for any circulating or cementing operation . . . a fact attested to by actual field performance under the most severe operating conditions.

(5) BAFFLED WHIRLER PORTS. These whirler ports provide the important wash-down whirler action so advantageous in circulating and cementing operations. When the fluid strikes these baffled ports, a downward and then an upward whirling motion results. In running in, this whirling action provides a means of effectively washing away bridges. During cementing, the whirling action, imparted first to the fluid preceding the slurry and then to the slurry itself, properly prepares the hole to receive the cement. It then assures best possible distribution of a uniform body of cement around the shoe and the shoe joint, reducing the hazard of channeling to a minimum. Here is the ultimate in cementing efficiency.

(6) EASY DRILLABILITY. Complete and easy drillability results from the internal construction of Baker-Formula Concrete and Plastic . . . the Plastic BALL-TYPE Valve Assembly being set on end in the concrete plug to present a minimum cross-sectional area to the drilling bit. The concrete and the Plastic are quickly and easily drilled up and circulated out of the hole.

For complete details concerning Baker Cement Whirler Equipment, contact the nearest Baker office or field representative; or refer to Pages 222 and 223 of the 1941 Baker (or Composite) Catalog.

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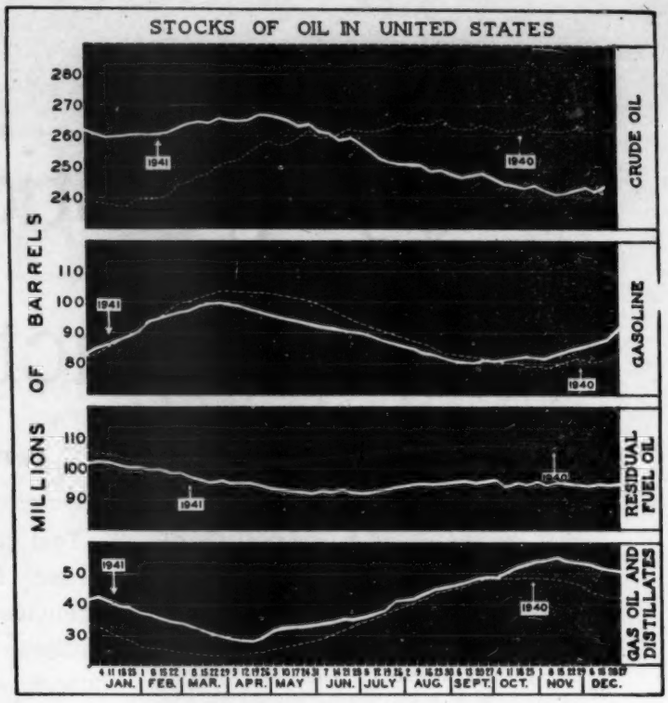
Trends

Industry Engaged in Adjusting Operations To Latest OPC Orders



INTERPRETATION of orders coming from governmental agencies designed to adjust the petroleum industry's operations to war conditions continues to be a major activity of operators. Currently, the greatest interest centers in the application of General Preference Order M-68 of the Office of Production Management in which coordination of the industry's producing operations is to be made effective through control of materials. The latest developments in this program are explained elsewhere in this issue.

There has been no general criticism of OPC's national proration plan. It is realized there were weaknesses in the former procedure of basing the state divisions of crude-oil markets on estimated demands as compiled by the Bureau of Mines. The principal difficulty in that program was that the bureau gave the increased demands to those areas which rapidly expanded their production without regard to the rights of other states. The bureau has no power to operate on any other basis. Under the new plan based on "careful, scientific and impartial investigations" production rates for each state will take into consideration several factors which have a bearing on the war needs and the application of conservation principles. An immediate result was the reduction in Illinois allowable for January and also a reduction in Oklahoma's output for that month. Oklahoma has been drawing on stocks for many months to supply the B. of M.'s estimated demands.

While receiving little general consideration at this time, the industry's economists realize that last week's consent decree under the Elkins Act involving practically all companies engaged in interstate pipe-line transportation, from a long-range industrial viewpoint, is more important than any of the emergency orders now being promulgated. This order placing a top on pipe-line earnings, and, making future operations subject to the broad powers of a consent decree administered by the Department of Justice, has significance the full import of which cannot be gaged at this time. As interpreted by one observer this decree, if it is not modified, will largely separate pipe-line transportation from the rest of the industry and will make it impossible for many operators to expand their transportation facilities to meet future requirements.

Finally there is the rubber-rationing program for all branches of petroleum industry to worry about. It is not expected that the government restrictions will have immediate importance in the consumption of gasoline and other petroleum products. Operators are inclined to await probable modifications of the original order before attempting to determine the full significance of the Government's program applying to a closely allied industry.

CRUDE PRODUCTION *4,081,490 bbl. daily average—down 228,385 bbl. One year ago 3,369,740 bbl.*

CRUDE STOCKS *243,617,000 bbl. as of December 20—up 934,000 bbl. One year ago 262,488,000 bbl.*

GASOLINE STOCKS **91,479,000 bbl. as of December 27—up 2,182,000 bbl. One year ago 83,620,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *95,891,000 bbl. as of December 27 — up 331,000 bbl. One year ago 101,765,000 bbl.*

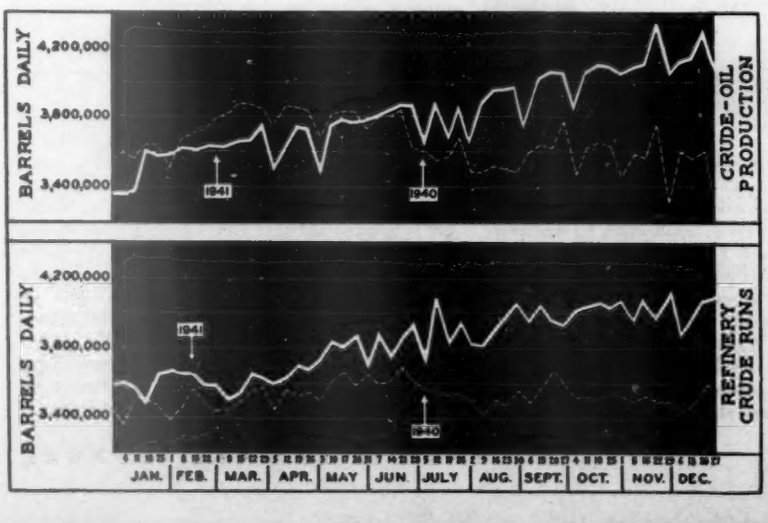
GAS OIL AND DISTILLATES *50,521,000 bbl. as of December 27—down 966,000 bbl. One year ago 43,534,000 bbl.*

REFINERY RUNS *4,096,000 bbl. daily week ended December 27 — up 26,000 bbl. One year ago 3,585,000 bbl.*

*Aviation-gasoline stocks not available this week.

DAILY AVERAGE PRODUCTION FOR WEEK

	Dec. 27 1941	Bur. Mines Dec. est. of demand	December state allowables	Dec. 20, 1941
Arkansas	73,520	76,500	76,300	73,695
California	627,750	635,800	613,200	652,125
Eastern fields	111,800	116,600	.....	111,250
Illinois	387,425	426,500	.....	383,545
Kansas	256,650	260,700	264,000	251,600
Louisiana	360,000	340,000	354,705	359,080
North Louisiana	*82,200*	.....	.....	*82,230*
Louisiana Gulf Coast	*277,800*	.....	.....	*276,850*
Michigan	52,450	52,300	60,000	52,620
Mississippi	73,140	60,300	.....	70,055
Nebraska	5,375	6,100	.....	5,175
New Mexico	118,760	116,100	117,000	118,550
Oklahoma	419,650	460,000	428,000	413,150
Rocky Mountain states	600	108 400		113,030
Texas	1,483,350	1,479,700	1,555,192	1,706,000
East Texas	*369,100*	.....	.....	*440,700*
West Texas	*291,600*	.....	.....	*340,000*
North Central Texas	*139,300*	.....	.....	*140,350*
East Central Texas	*86,850*	.....	.....	*91,600*
Texas Panhandle	*88,050*	.....	.....	*98,650*
Texas Gulf Coast	*413,050*	.....	.....	*485,550*
Southwest Texas	*95,400*	.....	.....	*109,150*
Total United States	4,081,490	4,139,000	.....	4,309,875
Total production, Jan. 1-Dec. 27, 1941		1,382,105,705 bbl.		
Same period last year		1,328,304,025 bbl.		



Many Questions Raised About OPC Production Order

By H. STANLEY NORMAN

Text of Preference Rating Order M-68, giving federal agencies more rigid control of equipment and authority to say how it will be utilized by the petroleum industry appears on facing page.

Preference Rating Order P-98, when issued, will become a companion regulation to M-68. The forthcoming order is designed to provide supplies to operators who comply with the coordinator's restrictions.

DRILLING operations that had not been started before December 23 and that in any way failed to comply with the OPM Order M-68 were held in abeyance this week throughout the oil-producing country. Meanwhile, the industry received assurances from Washington, D. C., that the companion Order P-98 which will renew the flow of materials to the oil business within limits of the M-68 regulation will be available shortly.

Wells drilling before the equipment freezing order was issued, even though they did not conform with the numerous provisions of M-68, were continued without interruption. But on locations upon which rigging up had not been completed by December 23 and which did not conform to the spacing limitations of Order M-68 all work was suspended.

Most supply companies continued to deliver materials necessary to operation of drilling or producing wells but required purchasers to furnish affidavit assuring the supplying firm that the equipment was for use in work conforming with OPM Order M-68.

Numerous protests and suggested amendments to Order M-68 were sent to Washington before it was a week old. Limitations on equipment for pumping wells expressed in M-68, if applied to the extent of the expressed letter in the order, would prevent artificial-lifting operations in some of the country's large fields where pumping wells are more closely spaced than one to 10 acres.

Declared in need of clarification also, oil men and their attorneys contend, is Subsection 6 of the exceptions listed under Paragraph C in Order M-68 which, they say, does not correlate from a practical standpoint with the general repair and maintenance Order P-100.

Behind most of the fears and opinions expressed by oil men this week and since text of M-68 became generally known was the feeling that restrictions are so stringent that materials will not be available for practical exigencies of operation. Doubtless, operators contend, there will be clarifications and amendments to the order the preference-rating orders that apply to oil.

Precautionary Measure

Suggestion was made by those who have worked closely with the OPC and OPM on previous preference-rating orders for the oil industry that a full report should be made on all drilling operations that do not comply with M-68. This suggestion includes drilling wells that may have been started considerably before the order was issued. This is largely a matter of precaution and as protection against any repercussions, particularly in the form of denial of privileges under the preference-rating orders that apply to the oil industry.

It was also suggested that supply companies should take steps to protect themselves. They should make certain, it was suggested, that the materials distributed during the period of waiting on P-98 are used as specified in the order.

The supercautious operators visualized the serious effects that might result from suspension of the preferential treatment for a period of weeks or months. This was another reason why operators attempted to comply with the letter of the order pending interpretation, clarification and amendment.

The principal concern of operators has to do with the interpretation of exceptions to the general rule which denies materials except in the case of the 40-acre pattern for oil wells and 640-acre patterns for natural-gas development. Operators as a unit are supporting the 40-acre program in new pools where such a pattern will permit the economic recovery of the oil in place.

It is pointed out, however, that in many areas closer spacing is necessary to recover the oil. Areas are also cited in which it is necessary to drill on a smaller pattern in order to determine the producing limits of the fields.

Wells on Adjoining Leases

Another problem has to do with situations in which wells have been drilled on adjoining leases on 5 to 20-acre patterns. Under a strict interpretation of the order, it is assumed that owners of adjoining leases will be compelled to drill one well to 40 acres which would mean that an operator, under present proration practices, would not recover his proportionate share of the oil in place. This has legal angles including responsibilities to owners of royalty interests which are not mentioned in the order.

The same confusion exists in regards to the rules and exception to be applied in the operation of producing properties. The 10-acre restrictions on materials for completed wells will work a hardship on many producers who are preparing to change from a flowing to a pumping operation or some other form of artificial lift. Ordinarily it is necessary for operators to accept those practices and spacing patterns which have been made effective by older producers in the fields.

Many operators feel that these conditions are either provided for in the exceptions already announced or they will be covered in supplementary orders to be issued as conditions demand. These operators attach considerable importance to exception No. 7 which lifts restrictions "to any case where the Priorities Division of OPM, upon recommendation of the OPC, has determined that production of petroleum by any operator is necessary and appropriate in the public interest and to promote national defense."

It is believed that a broad interpretation of this exception will cover all cases in which it can be shown that restrictions in present operating practices will tend to reduce available production and stop the development of existing producing areas.

It is pointed out that OPC officials have agreed that a minimum of 30,000 wells will have to be drilled in 1942 in order to maintain production at present levels. The general adoption of a 40-acre spacing program for oil wells, it is claimed, would mean that fewer wells would be drilled with a larger percentage of dry holes than under a plan which permits operators to adapt their drilling development to more normal practices.

D. R. Knowlton, Bartlesville, Okla., production manager for Phillips Petroleum Co., was rumored in Mid-Continent oil circles this week as scheduled to head up the OPC division to pass on applications for equipment under terms of Order P-98 when it is issued. Mr. Knowlton has been employed by Phillips since 1926. He is a graduate of the petroleum engineering department of Leland Stanford University and, earlier, received the degree of A.B. in geology from the University of Colorado. Since entering the oil business he has been active in association work on problems of well spacing and production allocation

PRIORITIES.

Text of OPM's Order M-68 Giving OPC Control Over Equipment From Which Other Regulations Spring

Part 1047—Conservation of Production Material for the Oil Industry

Conservation Order M-68

Whereas, The Congress of the United States has declared a "state of war between the United States and the Imperial Japanese Government," and has further adopted Joint Resolutions "declaring that a state of war exists between" the Government of Germany and the Government of Italy "and the Government and people of the United States"; and

Whereas, The prosecution of this war requires the immediate increased use in emergency activities of vast quantities of steel, nonferrous metals, rubber, and other critical materials; and

Whereas, It is imperative to an effective prosecution of this war that the production of petroleum be conducted under circumstances and conditions which will assure a maximum recovery of petroleum and associated hydrocarbons, and which will not involve a waste and inefficient use of the limited quantities of critical materials available for petroleum production; and

Whereas, Conservation of materials by means of the restrictions hereinafter ordered in the use of such material in the production of petroleum is necessary in order to maintain the production of petroleum for war uses and essential civilian services and to assure a minimum expenditure of scarce equipment;

Now, therefore, it is ordered, that:

1047.1 *Conservation Order M-68* — (*a*) *Definitions.* — 1. "Person" means any individual, partnership, association, corporation, or other form of enterprise.

2. "Production" means the discovery, development, and depletion of petroleum pools, including without limitation the operation of cycling plants and plants for the extraction of natural gasoline and associated hydrocarbons.

3. "Petroleum" means petroleum, petroleum products, and associated hydrocarbons including but not limited to natural gas.

4. "Operator" means any person engaged in production.

5. "Material" means any commodity, equipment, accessories, parts, assemblies, or products of any kind used in production.

6. "Exploratory well" means any well located not less than 2 miles from any well capable of producing petroleum.

7. "Condensate field" means any condensate distillate, naphtha, or retrograde pool or pools in which the liquid and gaseous hydrocarbons recovered at the surface occur in a single phase under original reservoir conditions or any gascap pool in which commercial oil occurs in the liquid phase and in which there exist a gas cap or gas caps of a size sufficient to have the essential characteristics of a condensate pool.

8. "Pool" means any underground accumulation of crude petroleum or associated hydrocarbon substances, including but not limited to natural gas, constituting a single and separate reservoir or source of supply within a field, area, or horizon whether or not presently discovered or developed.

(*b*) *Conservation of material used in production.*—Subject to the exceptions in paragraph (*c*) hereof no operator shall order, purchase, accept delivery of, withdraw from inventory or in any other manner, directly or indirectly, secure or use material for production purposes. Subject to the exceptions in paragraph (*c*) hereof, no person shall deliver or otherwise supply, or cause to be delivered or otherwise supplied, any material which he knows, or should know, is intended for use in production.

(*c*) *Exceptions.*—The provisions of paragraph (*b*) hereof shall not be applied in the following instances:

1. To any case where material is to be used by an operator for repair or maintenance purposes or as operating supplies as these terms are defined in Preference Rating Order P-98.

2. To any case where material is to be used by an operator exclusively in carrying out, by means of a research laboratory, investigations into more efficient or more effective methods of conducting production operations.

3. To any case where material is to be used by an operator exclusively for operations directly involved in the search for and discovery of a previously unknown pool, including without limitation material necessary for geological, geophysical, and geochemical prospecting and material used in the drilling and completion of any exploratory well.

4. To any case where material is to be used by an operator in secondary recovery operations by means of artificial water drive, gas drive, or air drive operations, but not including material to be used in production operations by means of primary gas cycling or pressure maintenance.

5. To any case where material necessary for lease equipment, including oil-treating equipment and salt-water disposal or injection equipment, but not including pumping or other artificial lifting equipment, is to be used by an operator.

6. To any case where material is to be used by an operator for pumping or artificial lifting equipment to be installed on a well located on any single lease or tract in any field on which lease or tract the number of wells to which pumping or artificial lifting equipment has been or is to be attached does not at any time exceed an average of one well to every 10 surface acres of that part or parts of such lease or tract as are contained within the productive limits of the field; or to any case where material is to be used by an operator for pumping or other artificial lifting equipment to be installed on a well located on any single lease or tract of 10 acres or less in any field on which lease or tract no other wells are located to which pumping or other artificial lifting equipment is attached.

7. To any case where material is to be used by an operator to drill or complete any well in any discovered or undiscovered oil field, other than a condensate field, where such well conforms to a uniform well-spacing pattern of not more than one single well to each 40 surface acres.

8. To any case where material is to be used by an operator to drill, complete, or provide additions to any well in any discovered or undiscovered natural-gas field, other than a condensate field, where such well conforms to a uniform well-spacing pattern of not more than one single well to each 640 surface acres.

9. To any case where the director of priorities, Office of Production Management, upon recommendation of the Office of Petroleum Coordinator, has determined that production is necessary by any operator or in any field where any conditions in such field make it necessary and appropriate in the public interest and to promote the war effort. Application for such a determination shall be made by letter and filed with the Petroleum Coordinator for National Defense, Department of the Interior, Washington, D. C. Information to be submitted in such application shall be in accordance with OPC Form PD-214a, OPC Form PD-214b, or OPC Form PD-214c, issued by the Office of Petroleum Coordinator.

(*d*) *Restriction on subdivision.* — No single lease or tract existing as such as of the effective date of this order shall be subdivided or otherwise rearranged for the purpose of making available to any person the provisions of paragraph (*c*) 6.

(*e*) *Violations.*—Any person affected by this order who violates any of its provisions or a provision of any other order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this order may be prohibited from receiving further deliveries of any material subject to allocation, and such further action may be taken as is deemed appropriate including a recommendation for prosecution under Section 35 (A) of the Criminal Code (18 U.S.C. 80).

(*f*) *Revocation or amendment.* — This order may be revoked or amended at any time as to any person. In the event of revocation, deliveries shall be made in accordance with the provisions of any applicable preference rating order without further restrictions, unless such deliveries have been specifically restricted.

(*g*) *Applicability of Priorities Regulation No. 1.*—This order and all transactions affected thereby are subject to the provisions of Priorities Regulation No. 1, as amended from time to time, except to the extent that any provision of this order may be inconsistent therewith, in which case such provision shall govern.

(*h*) *Effective date.*—This order shall take effect on the date specified in the heading hereof, and shall continue in effect until revoked. (P.D. Reg. 1, Aug. 27, 1941, 6 F.R. 4489; O.P.M. Reg. 3 Amended, Sept. 2, 1941, 6 F.R. 4865; E.O. 8629, Jan. 7, 1941, 6 F.R. 191; E.O. 8875, Aug. 28, 1941, 6 F.R. 4483; Sec. 2 (a), Public No. 671, 76th Congress, Third Session, as amended by Public No. 89, 77th Congress, First Session; Sec. 9, Public No. 783, 76th Congress, Third Session.)

ONLY MAJOR OIL FIELD IN THE COUNTRY WITH NO PIPE-LINE OUTLET IS MISSISSIPPI'S TINSLEY FIELD WHICH HAS BEEN SHIPPING SOME 77,000 BBL. A DAY BY TANK CAR. SHOWN HERE IS THE NEW HALF OF UNION PRODUCING CO.'S 100-CAR LOADING RACK RECENTLY PUT INTO OPERATION. IT IS ONE OF SEVERAL IN THE FIELD. OPC'S RECOMMENDED RATE OF PRODUCTION FOR MISSISSIPPI IN JANUARY OF ONLY 60,400 BBL. A DAY (ALL FROM TINSLEY) WILL KEEP TANK-CAR SHIPMENTS BELOW PRESENT LEVELS.

This Week...

Oil in the Clark Fork in West Texas' Wasson field adds to interest in general possibilities of the formation. Its first West Texas prospects appeared several months ago near Lubbock.

●

Canada's oil production averaged 27,536 bbl. daily most of last year, 23,820 bbl. the year before. Gasoline consumption fell below the 1940 rate for the first time in September, reflecting imposition of rationing.

●

Current appraisal shows oil products selling at 62 per cent of 1926-price level, commodities as a whole at 92 per cent. Petroleum prices are virtually pegged, other commodities still inclining.

●

Some are optimistic that petroleum consumption will be not curtailed below 1941 levels by denying motorists free access to tires. Other refiners foresee elimination of long trips, diminished pleasure driving, general psychological reaction as definite threats.

●

California producers may ask for revision of the OPC allowable for January which provided for 33,000 bbl. per day more oil than produced in December.

●

Contributing author, who insists on anonymity, says lack of competent equipment and skilled engineers will render most of European and near eastern oil fields a hollow victory to Nazi.

●

Oil men from all parts of the country petitioned the OPC this week for clarifying amendments to Preference Rating Order M-68. Petitioners want it more flexible and practical, think they have good arguments.

●

Marine transportation of petroleum along Pacific Coast is disrupted. One field, completely dependent on tankers for an outlet, is completely shut down. Distribution of products also slumps along with production.

●

Chief buyers of Illinois crude petitioned Governor Green to call special legislative session. Purpose: To enact conservation law implementing Coordinator Ickes' allocation order, perhaps retain intrastate jurisdiction over some phases of operations.

●

Search for oil in Salina basin of Kansas, resulting from shows reported in Mississippian along west flank of Nemaha ridge. Indicates production may be pushed further west.

More priority orders for the oil industry soon will be issued. P-98 is designed to provide supplies for allocation to operators who comply with restrictions imposed in M-68. Also forthcoming: M-68-a, M-68-b, and M-68-c, which will apply to transportation, refining, and marketing in the same manner as M-68 does to the production branch.

●

New form issued for defense-plant rating called PD-200. Asks listing of materials in form in which they reach the project. Applies to aviation-gasoline plants, toluene units and synthetic-rubber facilities for converting hydrocarbons into defense materials.

●

Synthetic-rubber production from petroleum gases, including "vinyls" is about 30,000 tons annually. Scheduled for prompt completion is a new plant capable of making 15,000 tons yearly; another became active 2 weeks ago yielding 5,000 tons annually. Still far ahead is annual peacetime consumption figure of crude rubber —700,000 to 800,000 tons.

●

Expansion projects slated for the first 5 or 6 months of 1942 at Standard Oil Co. of Louisiana's Baton Rouge refinery will cost $17,000,000. Major item includes facilities for doubling output of 100-octane-gasoline components. A 10 to 12-million-dollar synthetic-rubber plant is well advanced.

●

Eight per cent reduction in civilian consumption of crude rubber is goal of drastic order regulating automobile-tire distribution. Ninety-three per cent of crude rubber imports originate in countries occupied, invaded, or threatened by Japanese. Seventy-five per cent of all imports go into tires.

Oil Industry on Eligible List For New Tire Purchases

WASHINGTON, D. C., Dec. 29.—Vehicles used in the delivery of fuel oil, gasoline and other petroleum products will be granted permission to buy tires and tubes under the drastic restrictions imposed upon the sale of new automobile tires late last week by Price Administrator Leon Henderson.

The remainder of the oil industry is also on the eligible list for the purchase of new tires, under a clause in the order permitting the sale of tires to be used for the transportation of material and equipment for the construction and maintenance of production facilities.

Otherwise, the restrictions on the sale of new tires prohibit such sale to civilian users with the exception of sales of tires to be mounted on vehicles which are operated by physicians, surgeons, visiting nurses, or veterinaries, and which are used principally for professional services.

In addition the order prohibits the sale of any tire, tube or casing unless it is to be mounted on an ambulance; a vehicle used exclusively for the maintenance of firefighting services, or necessary public police services, the enforcement of such laws as relate specifically to the protection of public health and safety, the maintenance of sanitation services or mail services; buses with a capacity of 10 or more passengers; or trucks operated for the transportation of essential civilian requirements.

Farm tractors or other farm implements, other than automobiles or trucks, and industrial, mining or construction equipment, other than automobiles or trucks are also excepted from the prohibition.

With the exception of these essential services, the nation's 32,000,000 motorists will be denied the privilege of buying new automobile tires for the duration of the war.

The effect of the prohibition against the purchase of tires upon the consumption of gasoline, motor oil and other petroleum products, cannot yet be estimated. However, it is certain that this consumption will be decreased materially.

Taxicabs, which are large consumers of gasoline and oil, will not be permitted to buy new tires, under the order as it now stands. Retail delivery trucks, with the exception of those specifically exempt under the order, also will be banned from the list of those eligible to obtain new tires.

Pleasure driving will be limited to the extent of the life of tires now mounted on civilian passenger cars, and in this class of use, Mr. Henderson strongly urged the immediate reduction in the amount of driving now being done. He suggested that "unnecessary driving" be eliminated entirely, and that wherever possible car owners "double up" in driving to work, thus making one car and one set of tires do the work of three or four cars and sets of tires.

Persons who are on the eligible list to receive tires will have to fill out applications which must be approved by an inspector authorized by the local rationing boards to inspect and report on the condition of the applicant's tires.

The applicant will then take the application to the local rationing board for review. If the board decides the applicant's vehicle falls within the eligible classification and the need for such tire is properly certified to by an authorized inspector, the board may issue a certificate to the applicant for the purchase of the desired tire. The order then may be filled by a dealer.

The number of tires which may be sold in any state or county will be limited by quotas to be established each month by the OPM.

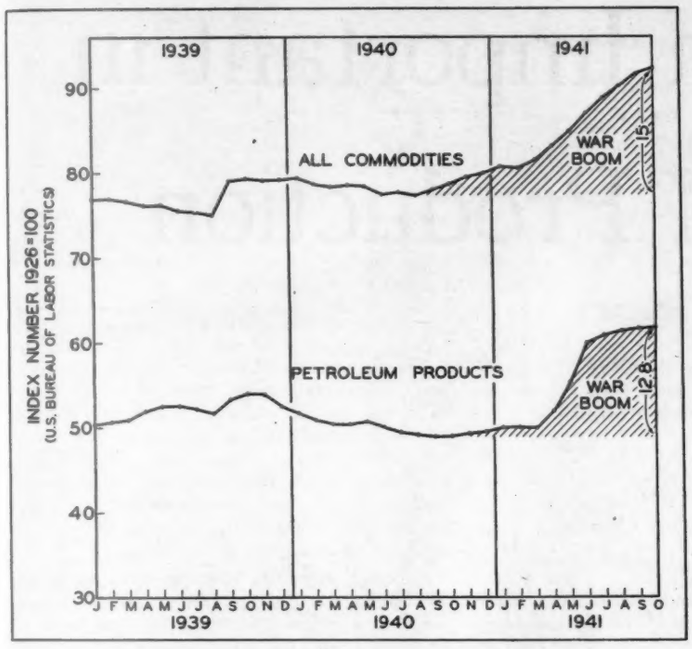


Fig. 1—Price advances in petroleum products, while more rapid than for all commodities, are still below "normal"

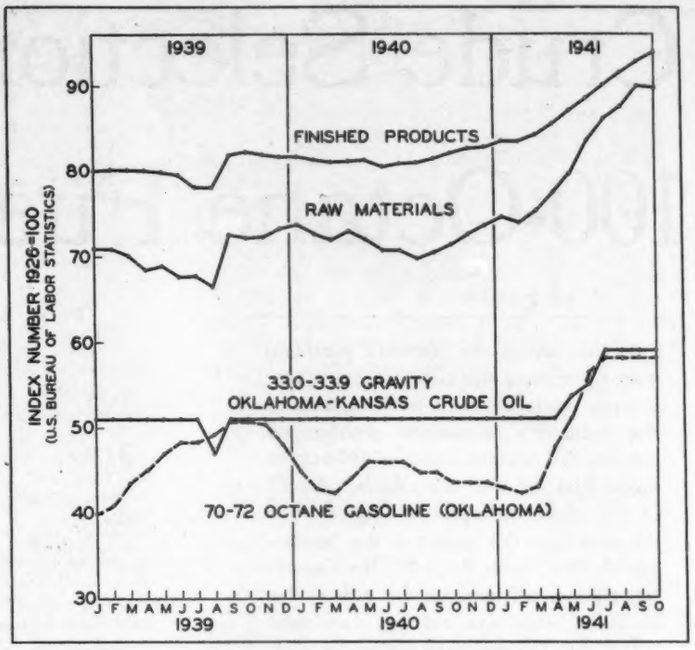


Fig. 2—Chart showing trend of crude-oil and gasoline indexes against raw materials and finished-product indexes

Price Ceiling Penalizes Progress

By J. P. O'DONNELL

NEW YORK, Dec. 30.—The imposition of a virtual ceiling on crude oil and refined-products prices by the Office of Price Administration is part of the penalty the oil industry is paying for the progressively efficient operation that is enabling it to sell products at 62 per cent of the 1926 levels while commodities as a whole are selling 92 per cent of that level. Price advances in petroleum products have been more spectacular from the standpoints of percentage and rapidity during the recent war boom, but these advances have let prices of these products remain well below "normal" while others in a longer, slower and still continuing advance have risen to nearly 100 per cent of that norm.

The general situation is illustration in the accompanying Fig. 1. In August 1939, before Hitler went to war against France and Great Britain, petroleum products stood at 51.7 on the U. S. Bureau of Labor index of commodity prices, which uses 1926 averages as a "norm" or 100. Thus representative petroleum products had been reduced 48.3 per cent from the 1926 average. In the same month the index for all commodities stood at 75, indicating that the prices of all commodities had been reduced 25 pr cent from 1926.

With the outbreak of war all prices rose. The price index for all commodities jumped from 75 in August to 79.1 in September. Petroleum prices at the same time rose from 51.7 on the index to 53.3. This was an increase of 4.1 points for all commodities against 1.6 points for petroleum products. The increase in all commodities was more than 2½ times greater than that in petroleum products though the percentage increase was not so pronounced since petroleum products started from a much lower base figure.

Following the minor boom at the beginning of the war there was a recession. The recession in oil prices began in December of that year, but it was not until February 1940 that the all-commodities index began to drop. The drop in the former was both sharper and more protracted than the latter. The petroleum-products index dropped from a high of 54 in October 1939 to a low of 48.9 in September 1940, an 11-month period in which it fell 5.1 points. The all-commodities index dropped from a high of 79.4 in February 1940 to a low of 77.4 in August, a 7-month period in which the decline was only two points. The decline in petroleum products was more than half again as long and more than 2½ times as great as the recession for all commodities.

Beginning of Real War Boom

The real war boom began in the latter part of 1940. The rise in the all-commodities index began in September and has continued since with but one interruption. From its August 1940 low of 77.4 it rose to 92.4 in October 1941, the last month for which the Bureau of Labor reports are available. This was an increase of 15 points or 19.4 per cent.

The petroleum-products index rose 1.1 points in the 4 months following its drop to the September 1940 low and was unchanged in February and March of this year. Beginning in April, however, there was an accelerated rise of 10 points in 3 months. This was a 20 per cent increase in a period in which all commodities rose but 7 per cent. In the next 3 months there was a rise of 1.8 points and in October the index was unchanged from September. From the September 1940 low of 48.9, the petroleum-products index rose to 61.7 in September and October 1941, an increase of 12.8 points or 26.2 per cent.

This comparison of the all-commodities index with the petroleum-products index reveals that:

1. While the percentage of increase in the petroleum-products index was greater, the actual increase in all commodities was greater.

2. Practically the entire increase in the petroleum-products index was confined to a brief, 3-month period giving it a more spectacular and attention-inviting aspect than the gradual rise in the all-commodities index.

3. The all-commodities index is still rising, whereas the petroleum-products index, under the influence of Washington orders, is stationary.

More definite comparisons are given in Fig. 2, which shows the trend of crude oil and gasoline indexes against raw materials and finished-products indexes. The crude-oil index remained at 51 through the entire war period to May of this year when it began a 3-month rise which ended at 58.9. It has been stationary since. This was an advance of 7.9 points. With the exception of February, the raw-materials index has been on the increase since August 1940, when it stood at 69.8, reaching a high of 90 in September 1941. It dropped to 89.7 in October. This was an advance of 19.9 points. While representative raw materials rose to 19.9 points, or 28.5 per cent, crude oil rose only 7.9 points or 15.5 per cent.

The comparison between gasoline and finished-products indexes indicates a more pronounced gain for the former. Beginning at 42.3 in March 1941, it rose rapidly to 58 in July but, like the crude-oil index, has been stationary since. This was an increase of 15.7 points or 37 per cent. Representative finished products rose from a low of 80.5 in June 1940 to 93.9 in October 1941, an increase of 13.4 points or 16.6 per cent. While this indicates an entirely disproportionate increase for gasoline, it must be remembered that this index rose from an abnormal low. The February 1941 index for gasoline was 42.3 in contrast to an average of 51.8 for the 5-year period ended with 1939. If the latter figure, which would be a more truly representative gasoline index, were used, the advance to the 58 peak would be but 6.2 points or 12 per cent. This would be less than the rise in the finished-products index.

(Continued on Page 86)

Crude Selection Important in 100-Octane Fuel Production

In this article the Journal's technical editor discusses the part that naphthenic-base crude oils will have in solving the industry's immediate problem of trebling the present output of 100-octane motor fuel for war use. Other phases of 100-octane gasoline production were discussed by the author in the December 25, 1941, issue, Page 63. Next week, Mr. Nelson will explain the role of the gasoline plant and refinery operators in isolating hydrocarbon stocks for high octane fuel production.

By W. L. NELSON

THE task of quickly increasing our production of 100-octane motor fuel from approximately 40,000 bbl. to over 150,000 bbl. per day is more difficult than most refiners realize. Although such fuels are being manufactured in complicated alkylation or polymerization and hydrogenation plants, the cost in manpower and supplies and the disruption created throughout the industry in isolating and accumulating the hydrocarbons, butane, and isobutane, force us to also consider the careful segregation of all naturally occurring high-octane gasolines. It may also be wise to consider the possibility of synthetic-rubber manufacture from butadiene, etc., which is also derived from the butanes and which would to some extent curtail the amount of butane available for 100-octane gasoline. Finally, even the best high-octane blending stocks (alkylation, etc.) do not usually have an octane number exceeding 90 and hence it is necessary to use only those straight-run base stocks which have a very high octane number, or 100-octane cannot be attained even with the addition of the maximum amount (now 4 ml.) of tetraethyl lead.

Naphthenic or Asphalt-Base Crude Oils

The somewhat scarce naphthenic-base crude oils are characterized by low gasoline content, high-octane gasoline or naphtha, low wax content (often wax free) and frequently a high sulfur content and high asphalt content. The United States production of such oils in recent years (Petroleum Refinery Engineering, 2nd Ed., pp. 78-80, McGraw-Hill Book Co.) has been somewhat as follows:

	Per cent of total production	Bbl. per day
1927	23.8	587,000
1930	20.4	504,000
1932	12.8	274 000
1934	10.4	268,000
1936	9.7	289,000

The production of naphthenic crudes in 1941 and 1942 will probably not exceed 350,000 bbl. per day but to a large extent the gasoline content of recent production has been high and the sulfur content has been low. Most of the new production is coming from the Gulf Coast area, and the Gulf Oil Corp. is already constructing a base-stock plant by orders of the OPM. The octane number of gasolines produced from the various bases of crude oils is somewhat as follows:

	Octane number of 398 end-point gasoline	
	Average	Range
Paraffin base	40.2	34-53
Paraffin intermediate	45.5	41-50
Intermediate or mixed	56.0	50-61
Naphthene and naphthene intermediate.	64.9	55-71

Unfortunately, the gasoline content of naphthenic crude oils is low, perhaps not exceeding an average of 12 per cent or even 7 per cent of low end-point base stock, and the sulfur content is high for some of the crude oils. Thus the amount of suitable naphthenic aviation base stock that is available probably does not exceed 15,000-20,000 bbl. per day. Such material would have an exceedingly high octane number, perhaps ranging between 77 and 85, and when admixed with isopentane (octane number of 91) and tetraethyl lead would constitute 30,000-40,000 bbl. per day of aviation fuel without the addition of specially prepared alkylates, etc.

The effect of boiling range or end point on octane number is clearly indicated in the tabulations given below. The lower the end point or yield, the higher the octane number.

East Texas gasoline		New Mexico gasoline		Hastings gasoline		Muskegon gasoline	
Per cent Yield	Octane number	90% Dist. temp.	Octane number	End point	Octane number	End point	Octane number
50	50	360° F.	54	400° F.	49.6	375° F.	25
36	60	340	61	300	71.0	400	8
24	70	236	65.5	...	...	437	0
..	..	225	76	....	...	...	..

CRUDE OILS THAT CONTAIN HIGH-OCTANE NAPHTHA

Name of field or crude—	County—	A.P.I. gravity	Per cent gasoline and naphtha (about 400° e.p.)	Per cent sulfur	Octane number	Notes	Ref. No.
California:							
Coalinga East Side	Fresno	20.7-22.5	6.8-9.2	0.5-0.7	....	19s-15e-M.D.	2
Coalinga West Side	Fresno	15.4	2.2	0.71	....	19 and 20s-14 and 15e-M.D.	2
Buena Vista	Kern	27.5-31.3	28-36	0.5-0.7	....	31s-23e-M.D.	2
Whittier	Los Angeles	20.3	18.8	0.56	....	.....	4
Sargent	Santa Clara	17.1	8.3	0.86	....	11s-4e-M.D.	2
Petaluma	Sonoma	19.7	2.1	0.63	....	.....	5
Santa Paula	Ventura	22.6	13.1	0.55	....	4n-21w-S.B.	2
Louisiana:							
Jennings	Acadia	23.8		0.37	....	.....	2
Sorrento	Ascension	26.3	3.7	0.45	....	.....	10
Caddo, heavy	Caddo	25.0	...	0.42	....	.....	11
Hosston	Caddo	21.0	...	0.49	....	.....	15
Edgerly	Calcasieu	21.5		0.68	....	.....	2
Lockport	Calcasieu	23.7-27.9	0.5.5	0.15-0.2	....	.....	10
Sulphur	Calcasieu	21.4	2.7	0.42	....	.....	10
Vinton	Calcasieu	19.7-28.4	0-13.3	0.2-0.33	....	.....	2 and 15
Sweet Lake	Cameron	28.8	3.7	0.15	....	.....	10
New Iberia	Iberia	23.5	2.5	0.21	....	12s-7e	15
White Castle	Iberville	24.2	6.1	0.3	....	.....	10
Welsh	Jefferson Davis	21.6	...	0.24	....	.....	10
Urania	La Salle	21.3-22.1	...	0.3	....	.....	11 and 15
Port Barre	St. Landry	21.3	4.2	0.53	....	.....	10
Anse La Butte	St. Martins	22.5-24.0	0-1.4	0.17-0.22	....	.....	2 and 15
Lake Barre	Terre Bonne	28.6	20.2	0.49	....	.....	10
Gueydan	Vermilion	27.7	5.0	0.17	....	.....	10
Ohio:							
Mecca	Trumbull	26.6	...	0.13	....	.....	2
Wyoming:							
Lost Soldier	Carbon	29.4	7.5	0.18	71	.....	6
Shannon	Natrona	24.2	...	0.2	....	40n-79w-6 pr.	2
Texas:							
Somerset	Atascosa	34-40.4	31-38.8	0.42-1.4	....	.....	3
Raccoon Bend	Austin	21.1-35.3	0-29.4	0.13-0.24	66-69	.....	9 and 17
Caesar	Bee	25.0	4.8-5.3	0.42	64	.....	16 and 17
Holzmark	Bee	31.9-48.8	19.8-77.2	.....	60-63	.....	17
Normanna	Bee.	37.7	39.8	.....	60	.....	17
Plummer	Bee	24.6	4.5	.....	64	.....	17
Yturri	Bexar	32.5	24.6	0.45	....	.....	3
Damon Mound	Brazoria	21.8-22.1	0-5.8	0.28-0.36	....	.....	2
Danbury	Brazoria	20.3-25.1	0.5	0.21	64	.....	9 and 17
Hastings	Brazoria	31.2-32.1	18.2-20.9	0.14-0.18	71(300ep.) 63.7(400ep.)	.....	12, 16 and 17
Lockridge	Brazoria	27.0	11.5	.....	64	.....	17
Manvel	Brazoria	24.8-26.8	3.6-8.5	0.19	67	.....	16 and 17
West Columbia	Brazoria	19-23.7	0-2.6	0.18-0.45	64	shallow	2,3 and 17
Alta Mesa	Brooks	25	7.5	.....	71	.....	17
Duck Bay	Calhoun	41.4	53.9		72	Welder	17
Heyser	Calhoun	32.5-38.2	28-55	0.16	61	shallow	17
Barbers Hill	Chambers	25.7-33.6	12.8-31	0.67	59-64	.....	17 and 2
Cedar Point	Chambers	28.5	7.3		66	shallow	17
Cotton Lake	Chambers	29.5	11.1-21.7	0.15	63	.....	16 and 17
Turtle Bay	Chambers	30.3	16.7	.....	62	.....	17
Amity	Comanche	37.8	30.3	.....	62	.....	17
Bruni	Duval	28.7-42.5	15.7-55	0.18	58-65	.....	7 and 17
Casa Blanca	Duval	20.3	1.0	.....	67	.....	17

(Continued on Next Page)

CRUDE OILS THAT CONTAIN HIGH-OCTANE NAPHTHA (Continued)

	County—	A.P.I. gravity	Per cent gasoline and naphtha (about 400° e.p.)	Per cent sulfur	Octane number	Notes	Ref. No.
Charamousca	Duval	19.7	1.5	.....	67	.....	17
Eagle Hill	Duval	19.0	0.8	.....	70	.....	17
Government Wells	Duval	21.6	4.0	0.18	66	.....	9 and 17
Hoffman	Duval	21.2-28.3	0-20.9	.....	64-68	.....	17
Kohler	Duval	18.8-21.2	0-7.5	.....	66	.....	17
Labbe	Duval	25.4	5.9	.....	66	.....	17
Loma Novia	Duval	23.5-26.6	6-9.5	0.1-0.13	68	.....	7, 16 and 17
Loma Vista	Duval	25.7	8.1	.....	68	.....	17
Long Horn	Duval	41.7	36.3	.....	66	4,029 ft.	17
Peters	Duval	23.0	8.2	.....	65	.....	17
Piedre Lumbre	Duval	20.4-22.7	1.4-3.0	.....	68	.....	17
Pierdes Pintos	Duval	21.1-22.1	....	0.55	....	.....	2 and 3
Sarnosa	Duval	21.3	4.4	.....	68	.....	17
Seven Sisters	Duval	20.9-23.0	3-5.9	.....	67	.....	17
Tarancahuas	Duval	21.1	2.5	.....	65	.....	17
Blue Ridge	Fort Bend	18.4-26.8	0-16.2	0.39-0.45	....	.....	2 and 3
Moore (Orchard)	Fort Bend	31.1-33.6	29-35.8	.....	56-63	.....	17
Rabbs Ridge	Fort Bend	26.1	8.0	0.2	....	.....	9
Sugar Land	Fort Bend	28.8	17.6	0.33	61	top	9 and 17
Thompson's	Fort Bend	23.4-26.1	1.7-8	0.2	66	5,050 ft.	16 and 17
High Island	Galveston	26.6-40.0	6.6-28.8	0.2-0.26	46-63	.....	9 and 17
Hitchcock	Galveston	29.1	7.5	69	....	.....	17
Batson	Hardin	25.2	8.2	0.61	....	.....	2
Sour Lake	Hardin	28.6	16.7	0.43	....	.....	2
Clear Lake	Harris	27	10-14.2	.....	63-65	.....	17
Friendswood	Harris	29.5	14.2	0.18	63	Webster	16 and 17
Goose Creek	Harris	21.3-26.3	.....	0.2-0.55	....	.....	2
Humble	Harris	17.8-22.6	0-3.7	0.43-2.4	65	.....	2 and 17
Mykawa	Harris	26.9-27.9	11.3	0.15	65	.....	16 and 17
Pierce Junction	Harris	21.1	.....	0.29	....	3,891 ft.	2
South Houston	Harris	21.3-27.9	9.9-16.3	0.2	63	.....	16 and 17
Sam Fordyce	Hidalgo	21.5-24.9	0-5.8	0.51	68-71	.....	16 and 17
Cordele	Jackson	20.8-23.3	0.2	.. ...	65	.....	17
Ganado	Jackson	25.6	10.3	.....	64	.....	17
Mauritz	Jackson	31.4	27.0	....	67	.....	17
West Ranch	Jefferson	28.7-30.0	16.6-17.9	0.2-0.21	65	West Beaumont	12, 16, 17
Amelia	Jefferson	28.7-31.1	6.6-16.5	0.21	64	shallow	9 and 17
Fannett	Jackson	24.8-32.1	8.8-27.3	.....	65-68	.....	17
Nome	Jefferson	27.8-28.8	11.1-12.8	0.23	66	.....	16 and 17
Spindletop	Jefferson	25.6-30.4	4.6-17.6	0.13-0.3	....	deeper sands	1
West Beaumont	Jefferson	25.6-27.1	6.5-8.3	.....	64-67	.....	17
Henne-Winch-Farris	Jim Hogg	20.2	1.2	.....	65	.....	17
Reynolds	Jim Wells	30.4-38	24.7-35.6	.....	60-68	.....	17
Wade City	Jim Wells	32.2	27.2	.....	66	.....	17
Kingsville	Kleberg	20.2	2.0	0.18	66	.....	16 and 17
Esperson	Liberty	20.3-25.6	0-4.6	0.22-0.33	64	.....	9 and 17
Esperson	Liberty	55.2	92.8	0.1	....	6,800 ft.	9
Hankamer	Liberty	19.2-36.2	0-22.3	0.25	64	.....	9 and 17
Hull (old)	Liberty	21.3-26.7	3.8-18	0.37-0.44	63-67	.....	2 and 17
North Dayton	Liberty	25.9	9.8	0.5	....	1,700 ft.	3
South Liberty	Liberty	21.8	2.8	.....	65	3,600 ft.	17
Mount Lucas	Live Oak	22.9-23.8	3.7-6.6	.....	70	.....	17
Oakville	Live Oak	19.6-23.7	0-3.6	..	67-70	.....	17
Jacobs	McMullen	21.1	..	0.22	....	.....	16
Markham	Matagorda	24-28.7	0-15.8	0.12-0.17	62-65	.....	3, 9 and 17
Nacogdoches	Nacogdoches	21.8	.....	0.39	....	.....	16
Baldwin	Nueces	23.5-26.3	0-10.6	0.17-0.21	69	.....	17 and 16
Clara Driscoll	Nueces	23.7-28	0-11.9	0.12	77	3,800 ft.	17 and 16
Clara Driscoll	Nueces	34.1-40.7	26-41	..	58	deeper	17
Corpus Christi	Nueces	23.4	4.2	0.16	60	.....	17 and 16
London	Nueces	24.4	5.2	.....	68	.....	17
Minnie Bock	Nueces	23.5	7.1	.....	73	.....	17
Richard King	Nueces	21.8	4.3	.....	69	4,000 ft.	17
Riverside	Nueces	32.2	29.8	..	69	.....	17
Saxet	Nueces	23.6-27.4	2.8-14.5	0.15	62-72	4,500 ft.	16 and 17
Turkey Creek	Nueces	22-39.2	3.3-39	.....	64-71	.....	17
Orange	Orange	23.5	2.5	..	65	shallow	17
Port Neches	Orange	21-21.5	.....	0.26	....	shallow	16
Terry	Orange	20.5	.....	0.34	....	.....	2
Brooksmith	Palo Pinto	26.4	.....	0.2	....	.....	9
Pecos Valley	Pecos	22.7	8.4	.....	65	.....	17
Greta	Refugio	23.3-39.3	4.1-38.5	0.22-0.27	56-66	shallow	7, 16 and 17
Fagan	Refugio	28.6	19.5	.....	63	.....	17
Refugio	Refugio	23.3-57.2	0-80.3	0.1-0.2	..	below 5,400 ft.	9 and 17
Tom O'Connor	Refugio	23.3-34.2	30	0.21	66	.....	16 and 17
East White Point	San Patricio	39.0	38.0	0.2	60-65	.....	14 and 17
Mathis	San Patricio	41.0	56.5	.....	65	.....	17
Midway	San Patricio	28.2	16.8 21.3	0.15	62	.....	16 and 17
Plymouth	San Patricio	31.4-39.9	29.5-47.1	0.14	53-63	.....	7, 16 and 17
Sinton	San Patricio	33.4-49	35.5-82.5	0.05	64-69	.....	7 and 17
Taft	San Patricio	21.2-23.5	0-8.3	0.18-0.22	67-70	.....	12, 16 and 17
Barbacoas	Starr	24.9	9.0	.....	67	.....	17
Cuevitas	Starr	35.8	32.9	0.12	....	.....	16
El Tanque	Starr	23.4	5.6	.....	70	.....	17
Guerra	Starr	34.5	31.8	.....	60	.....	17
Los Olmos	Starr	20.2	3.0	0.14	....	.....	9
Rincon	Starr	38.7-44	35.7-49	..	62-71	above 4,100 ft.	17
Rio Grande City	Starr	29.8	22.2	.....	64	.....	17
Sullivan City	Starr	24.0	14.6	.....	73	.....	17
Coletto Creek	Victoria	21.3	0-1.7	0.24	65	.....	16 and 17
Keeran	Victoria	30.5-37.4	13.5-36.9	0.13	38-64	.....	16 and 17
McFaddin	Victoria	21.6	3.5	.....	64	.....	17
Placedo	Victoria	25.2-40.3	2.4-46.3	0.14	48-64	.....	16 and 17
Clay Creek	Washington	25.2	6.5	0.35	....	.....	9
Adami	Webb	20.8	1.1	.....	68	.....	17
Albercas	Webb	20.8	2.1	0.17	69	2,100 ft.	16 and 17
Aviator	Webb	22.1	2.1	0.17	66	1,700 ft.	16 and 17
Cole West	Webb	21.1	3.3	.....	68	.....	17
Glen	Webb	22.1	5.0	.....	67	.....	17
Killam	Webb	20.9-22.9	2.4-7.3	.....	69	.....	17
Lonez	Webb	21.0	4.6	0.28	68	.....	16 and 17
O'Hearn	Webb	29.4	21 8	.....	66	.....	17
Oilton	Webb	21.0	4.0	.....	69	.....	17
Schott	Webb	20.5-21.1	..	0.19-0.23	....	.....	9
Schott	Webb	44.5	56.9	0.1	....	1,902 ft.	9
Boling	Wharton	21.9-22.8	5.5	.....	63-68	.....	17
Hillje	Wharton	25.8	10.2	.....	65	.....	17
Kubela	Wharton	24.0	3.3	.....	66	.....	17
Louise	Wharton	26.1	13.4	.....	61	.....	17
Magnet	Wharton	25.6	6.4	.....	65	.....	17
Pickett Ridge	Wharton	24.3-25.4	3.8-8.4	0.19	66	.....	16 and 17
Withers	Wharton	26.3	6.0	0.16	....	.....	16
Comitas	Zapata	20.6	2.1	.....	67	.....	17
Cuellar	Zapata	20.9	3.2	.....	69	.....	17
Escobas	Zapata	20.9	2.6	.....	66	.....	17
Jennings	Zapata	20.9	3.5	.....	66	.....	17
Mirando	Zapata	20.7-21.8	2.9	0.22-0.25	67	.....	16 and 17

If somewhat lower octane-number base stocks are considered (65-77) enormous amounts are available including those prepared from such abundant crude oils as East Texas.

Tabulation of High-Octane Crude Oils

The accompanying tabulation shown on this page lists most of the naphthenic crude oils in the United States that are useful for the production of aviation-fuel base stocks. Recently discovered fields are not included but under present conditions their usefulness will not be overlooked. At least 150 other naphthenic base crude oils were not included in the tabulation because of their high sulfur content or because of a total deficiency in gasoline. The tabulation should be examined with care because in many instances several crude oils are produced from a single field but from different sands or levels—and the crudes from only certain levels contain naphthas of superior octane number.

Many producers may not be aware of the special properties of their crude oils. This is particularly true because the low gasoline content of many naphthenic crude oils has led to the belief that they were inferior. The fact that the production of naphthenic crude is relatively small, causes these oils to be lost by mixing them with other more abundant crude oils. In some instances the Government may wish that these crude oils be segregated in the field and transported separately to refineries. Many of the naphthenic fields are old or the production per well may have been so low that they could not be operated under the difficult economic situation of the past few years. In rare instances it may prove to be advisable to reopen such wells or fields.

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One of the most closely watched wildcat plays is now spreading out from the Wasson and Slaughter fields, in the northern part of the Permian basin in West Texas. The extent of these fields is not generally realized, even after several years of development and shows the size of the stakes for which the wildcatter is playing today. The present status of the play is discussed by D. H. Stormont on Pages 60 and 61 of this issue.

STATE CAPITALS...

As they have once a month for the past 10 years, regulatory bodies of each of the important oil-producing states except California and Illinois set up a figure approximating the amount of oil its wells could produce during January. Last week, when most of them announced the state-wide allowables, they were still acting as representatives of sovereign states restricting production by voluntary agreement. However, they were acting under "recommendations" from the Office of Petroleum Coordinator for the United States. Each state took independent action, but there was little doubt that adjustments would be made where necessary to make state allowables meet the coordinator's recommendations. The state bodies were expected to continue their functions as usual except that their orders would conform to OPC recommendations in regard to allowables and well spacing. Recommendations for January allowables were made early last week (see The Oil and Gas Journal, Dec. 25, 1941, p. 60) and by the end of the week those states which could control production were making orders to conform. Others were making ready to institute controls.

OKLAHOMA

NO REDUCTION in allowables was needed in Oklahoma, third largest producing state. The Corporation Commission made a gesture of conforming to OPC recommendations by reducing its state-wide figure from 428,000 to 425,000 bbl. This was still nearly 10,000 bbl. a day over the OPC's 415,700 bbl. Catch was that Oklahoma probably could not make much more than the OPC figure anyway. It was pointed out at a short conference in Oklahoma City the day after the coordinator's announcement that the state's production has averaged 418,156 bbl. daily during the last 4 weeks and was not likely to show an increase.

None the less, Commission Chairman Reford Bond advised the coordinator that the commission will call a special hearing late in the month to reduce the allowable if production gets "out of line." Reason for the commission's figure, he said, was that it was trying to keep a balance of supply and demand, particularly in stripper areas.

KANSAS

SOME DISAPPOINTMENT resulted among Kansas operators from the OPC recommended rate. Severely prorated producers had hoped federal recommendations would increase their state-wide allowable. Instead it was reduced. Conservation Director Theo A. Morgan, whose recommendations are usually followed by the Corporation Commission, had proposed a January allowable of 264,000 bbl. a day. The December figure was 260,300 bbl. But OPC suggested 259,900 bbl. Commission officials, through Chairman Andrew W. Schoeppel, raised mild objections, met with oil men at Wichita early this week to discuss the situation, and took the recommendations under advisement.

Because Kansas had been increasing its pipeline capacity so it could produce 300,000 bbl. a day, an attempt to have the OPC rate increased was expected, but success of the attempt was likely to depend more on what kind of oil Kansas could produce than how much it could transport.

TEXAS

NEXT DAY AFTER OPC announced its recommended production rates for the states, the Railroad Commission convened its monthly state-wide hearing (recessed at the request of OPC). In quick succession the commission:

1. Issued an order fixing allowables for January under the schedule calling for only 7 shutdown days instead of the 8 during December, these days to be January 4, 11, 15, 18, 25, 30 and 31. This step automatically upped the estimated basic net allowable to 1,620,659 bbl. a day.

2. Made its state-wide 20-acre spacing rule conform with the OPM order for 40-acre spacing, announced that exceptions to the spacing rule (No. 37) would be issued contingent upon approval by the OPM and the OPC.

3. Announced a series of confidential hearings starting January 2 on refiners' needs for high octane crudes to be manufactured into products for war.

4. Called upon operators for data on physical conditions in all flush fields, particularly bottomhole pressure determinations, so as to be ready for production at greatly increased rate of flow.

Underproduction was estimated on experience at 4.27 per cent, amounting to 69,202 bbl. Deducting this from the net figure gave an indicated actual production of 1,551,457 bbl., which is 22,043 bbl. less than the coordinator's figure of 1,573,500 bbl. New wells during January were expected to absorb the difference, and, by comparison with December estimate of demand by the Bureau of Mines, was up 93,800 bbl. a day from current production.

Present production schedules for individual fields were unchanged with a few exceptions. Darst Creek was exempted from shutdowns because of large volume of water production. Three Ordovician fields in West Texas, producing a sweet paraffinic crude from which a high viscosity-index lube is made were placed on the same basis as low cold-test fields and their basic allowables increased accordingly.

ILLINOIS

SEEKING TO FORESTALL complete federal control of the Illinois oil industry, 44 of the largest buyers of crude petroleum in the state and representatives of key oil firms adopted a resolution calling on Gov. Dwight Green to include stringent regulatory war-time-only legislation in a second special session call of the General Assembly.

The meeting had been called by industry leaders to determine a course of action following Mr. Ickes' order to limit daily production of Illinois fields to 386,400 bbl. during January 1942.

Direct control of production, however, reportedly will be made from the regional coordinator's office in Chicago for the present.

LOUISIANA

THE NEW production allowable for the state in January was fixed last week by state Conservation Commissioner Joseph L. McHugh at 361,111 bbl. daily, an increase of 6,406 bbl. over the preceeding month.

The total daily allowable production for the South Louisiana fields amounts to 286,757 bbl., while the North Louisiana fields have a daily allowable of 74,354 bbl.

CALIFORNIA

THE CONSERVATION COMMITTEE of California Oil Producers held its first meeting last week as a subcommittee of the coordinator's production committee of District 5, and delegated the task of allocating the 646,200-bbl. California daily oil allotment for January to an expanded allocation board.

E. E. Pyles, chairman of the production committee, explained that even though California oil requirements for war and civilian uses were computed at 646,200 bbl. there was no assurance that the total could be maintained.

Members of research and coordinating committee at their first meeting in Oklahoma City. Seated: H. W. Bell, Louisiana Department of Minerals, chairman; F. V. L. Patten, chief supervisor, Oil and Gas Division, Texas Railroad Commission; John M. Kelly, member, New Mexico Oil Conservation Committee. Standing: L. B. Taylor, petroleum engineer, Conservation Division, Kansas Corporation Commission; Dan O. Howard, petroleum engineer, Oklahoma Corporation Commission; F. R. Frye, petroleum engineer, Department of Conservation, Michigan; Dr. F. M. Van Tuyl, head of the department of petroleum engineering, Colorado School of Mines. A. M. Crowell, director of the Arkansas Oil and Gas Commission, who was unable to attend the Oklahoma City meeting, is a member of the committee

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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Reasonable Interpretation

There does not appear to be any reason in fact for the concern expressed by many operators and suppliers regarding the application of General Preference Order M-68. This order of the Office of Production Management was made on the recommendation of the Office of Petroleum Coordinator and incorporates in general terms the latter's program of coordination for the industry's producing operations during the war period.

There is nothing in the orders so far issued indicating that the petroleum coordinator has in mind any major revisions in the industry's present operating practices. He and his advisers know as well as anyone that radical changes at this time will bring nothing but confusion and delays which will defeat the Government's main objective of assuring adequate supplies of petroleum for the armed forces and for civilian uses supporting the military.

The Government's purpose in establishing certain standards in well spacing is to prevent a duplication of the development which took place in part of the Illinois basin and in a few scattered areas in other parts of the oil country.

Among a great majority of producers, operating practices based on conservation principles are automatic and routine. They don't use more equipment and supplies in the drilling and in the operation of wells than are necessary. Their first concern in the development of a new pool is how they can most economically produce their share of the recoverable oil. This is nothing more than good business applied to oil operations.

There have been exceptions to this rule but most of them belong to the past, before the oil states enacted the necessary legislation and established the engineering departments which have cooperated with the operators in implementing conservation principles.

It is true, of course, that some mistakes have been made. The production of crude oil is not an exact science and the agencies of coordination at Washington would have made trouble for themselves and the industry if they had attempted control through arbitrary and rigid regulations generally applied. Drainage conditions differ from field to field and that fact must be reflected directly in drilling and producing practices.

Operators working together and through the state regulatory bodies have made consistent progress in determining the best practices, extending from the operation of flush fields to the application of secondary-recovery methods in old areas. They have dealt with varying conditions in producing formations which are found from a few hundred feet to more than 2½ miles below the surface. In determining what should be done, a certain amount of trial and error procedure is necessary in addition to the application of many scientific and engineering arts which are the basis for present-day operations.

Fortunately, OPC recognizes this fundamental condition in the exceptions which are to be granted to meet existing operating conditions. This applies to more than 350 thousand producing wells and to the proven areas yet to be developed to which the countries, now allied in war, must look for the great bulk of their supplies through the emergency. Exploratory operations have been given the green light.

The Petroleum Industry Council for National Defense, the functional committees on production from the industry and the state conservation departments, are in close touch with field conditions. Working with the governmental agencies, there should be a minimum of delays in continuing those operations which for several weeks have been producing more than 4 million barrels of crude oil daily and which, with the required materials, can be expanded to meet still greater requirements.

Reserve Estimates Provide Important Danger Signals

By W. V. HOWARD

In this, the third of a series on reserves and discovery rates, the Journal's field editor appraises the frequently suggested method of allocating reserves to the year of discovery of the field. Despite a great many difficulties inherent in the method, it is pointed out that it does furnish a danger signal by means of which we can be warned whenever the discovery rate falls near or below the limit of safety.

WITHIN recent months the question of allocation of reserves to the time of original discovery of the field has come to the front and has caused much discussion. The writer has estimated reserves as of the date on which the calculation is made and may therefore be considered to be prejudiced in favor of that method of handling the problem. At the same time, The Oil and Gas Journal is interested only in presenting data in the form in which they are most useful and not directly in favoring any one method over any other or over any combination of methods. It seems, therefore, as if an appraisal of methods of estimating reserves is in order.

The reasons for estimating reserves are many and varied. They may be divided into the short-range and long-range views. The extreme case of the former may be summed up in the following statement: Based on wells now completed, on prevailing prices, on present engineering methods, the amount of oil contained in proven reserves is so much. If the reader does not infer that any of these factors may change, abruptly, the final figure achieves a definiteness not inherent in the estimates. Actually, most estimates presented as of a certain date imply a range in prices within limits set in recent years and a reasonable increase in engineering skill and the application of that skill. A certain amount of leeway in the definition of the term "proven acreage" is also inherent in the method.

Significance of Inventory

The estimate as of a certain date, if presented alone, has very little significance. To say that the oil supplies now in sight in the United States amount to 20,000,000,000 bbl. is an interesting statistical fact, but little more. To divide that figure by 1,500,000,000 and get an answer of 13.3, representing years' supply, gives a result which is arithmetically correct but otherwise meaningless if presented alone. However, if last year's reserves stood at 15 years' supply, a relative drop in our reserves is indicated and if the figure of 15 years' supply is to be restored more prospecting is necessary.

The contrast in years' supply of 7.9 in Oklahoma in 1941 as compared with 8.4 in 1940 tells the operator interested in problems of transportation and marketing much concerning the future trend of Oklahoma production as compared with activity for West Texas where the years' supply increased from 31.1 to 32.2 during the same period. It also tells the producer in what area, other things being equal, allowables are likely to be higher and where successful prospecting will yield higher returns, even if prices remain steady in both areas.

According to this method of estimating known reserves, it is of no importance whether increases are due to lower production, extensions to old fields, discoveries, or the introduction of large-scale secondary-recovery projects. No distinction whatever is made between the reserves added by the exploration departments and the production departments. The method is merely an inventory which, if compared to inventories made in other places or at different times, presents one element of the nation's working capital in oil.

An extreme case of the long-range estimate might be stated as follows: The reserves at any given time consist of all of the oil which may be produced by any method from every field now known whether developed fully or not.

In Kansas, the outer limits of fields found as long as 10 years ago are not known. Fields have gradually grown so as to include others, once believed separate, and the process is continuing at an accelerated rate in some areas. Therefore, any estimate made at a certain time needs to be revised constantly for an indefinite period, possibly as much as 2 decades. In other words, in some fields the books for 1941 discoveries cannot be closed in so far as the original pay is concerned for some 20 years without considering any variations whatever in operating practices.

Knowledge of the content of a pay implies a knowledge of the porosity and permeability of the pay, of the nature of the drive which governs the amount of oil physically recoverable, of the proration orders which will be issued governing production, of the rate of drilling of the field, of the ultimate spacing and of other unpredictable factors.

New engineering methods, such as flooding, may greatly increase recoverable reserves. The natural production of Bradford, prior to flooding, is estimated at 203,000,000 bbl. The amount produced by water flooding is placed at 186,250,000 bbl. and the amount which will be still produced is estimated to be 118,397,000 bbl. To add 150 per cent to the estimated natural recovery of, say East Texas, because of water flooding would lead to very questionable results. In Bradford, recovery by natural methods is estimated to be about 110 bbl. per acre-foot. Recovery in East Texas is placed by some observers at 700 bbl. per acre-foot. At present there is a water drive in East Texas but its effectiveness is not fully understood. Methods are now being attempted to ensure that the effect of this water drive will be continued to the fullest extent by returning all water to the formation. The present estimated recovery is based on a gradual decline in pressure. If water is introduced to the formation this decline will be at a slower rate. However, it is not known whether the present methods are pulling oil down the structure at a rate sufficient to overcome the increased efficiency of the water drive.

There is no doubt but that production costs will be lower with a drive than without because of the longer flowing life of the field. This is equivalent economically to increasing the recovery. It is quite probable that the increased water drive will increase recovery as well as reduce costs. To what date should this increase be allocated? To the date of discovery of the field or to the date of the commission's order permitting water-disposal in the sand?

There is a definite reason for allocating oil reserves to the year of discovery of the field and even of including lower sands. Once commercial production is obtained in a pool, it is unlikely that the pool will be abandoned until its outer limits are known and it has been prospected to depths as great as the geology warrants and equipment will carry a well. Hence all oil to be found in that field throughout its whole future history has become a routine development so far as exploration is concerned.

Discovery Versus Development

That the Eocene will eventually be sought in Ventura Avenue, California, is practically a certainty. That a well will ever be drilled in a certain locality which may overlie a major pool is not a certainty. Therefore, if we are appraising the efficiency of our exploration for oil and the future needs for additional exploration, it is possible to get a picture only by allocating reserves to the year of discovery of the field.

Capital investments involving billions of dollars are not made on the basis of only 15 years' supply, especially when it is realized that there still will be some of that oil in the ground 50 years from now. Investments are made on the basis of continued replenishment of reserves so that oil may be produced at the current rate, or even an increased rate for many years.

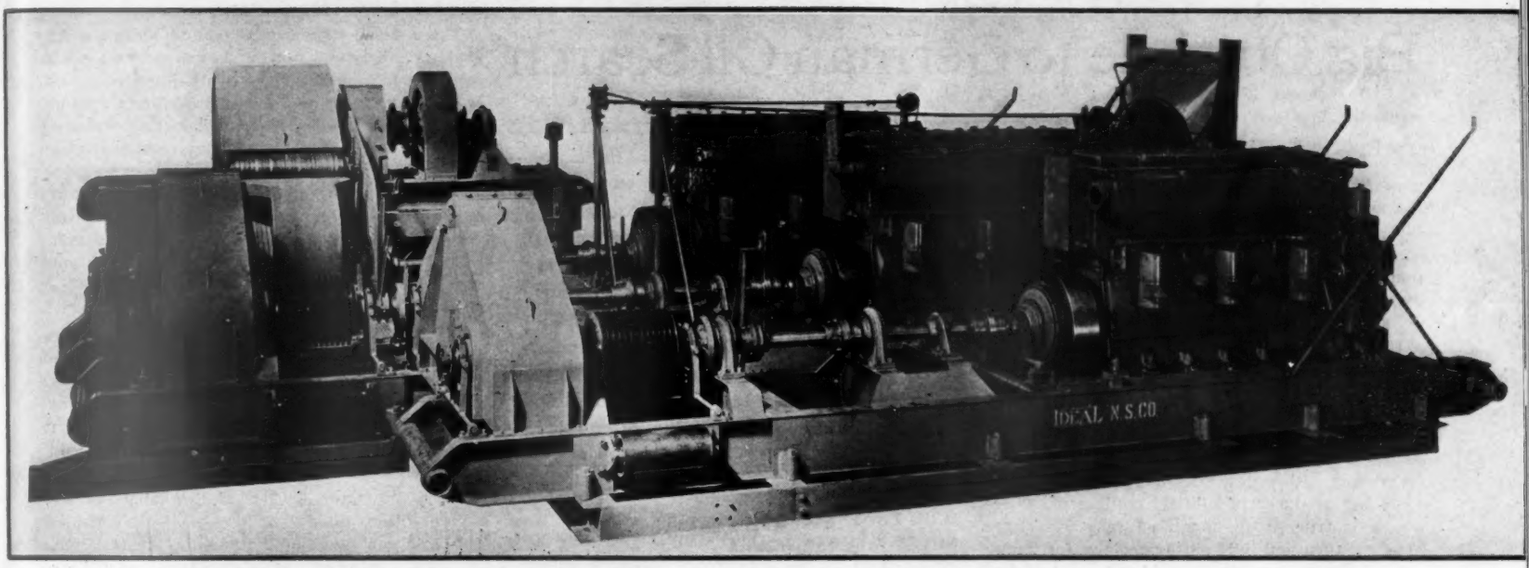
The amount of oil that is being found this year will not be known to the nearest million barrels for many years, but it does not take a highly skilled geologist or engineer to know that Apache will never be an East Texas or even an Oklahoma City. If the estimate of probable ultimate production at Apache is not within 25 per cent of the amount which is actually produced as good an estimate as can now be made is essential for operators in the field, for pipe-line companies serving the field and for refiners using the crude. The possibilities of Arbuckle or even Reagan production from the area can be only speculation, but the guesses must be made even if they involve only the cost of drilling a well to the Reagan. Present possibilities might be placed at zero for that formation but a shallow Reagan discovery in the area to the south would greatly increase that possibility and would definitely warrant a well.

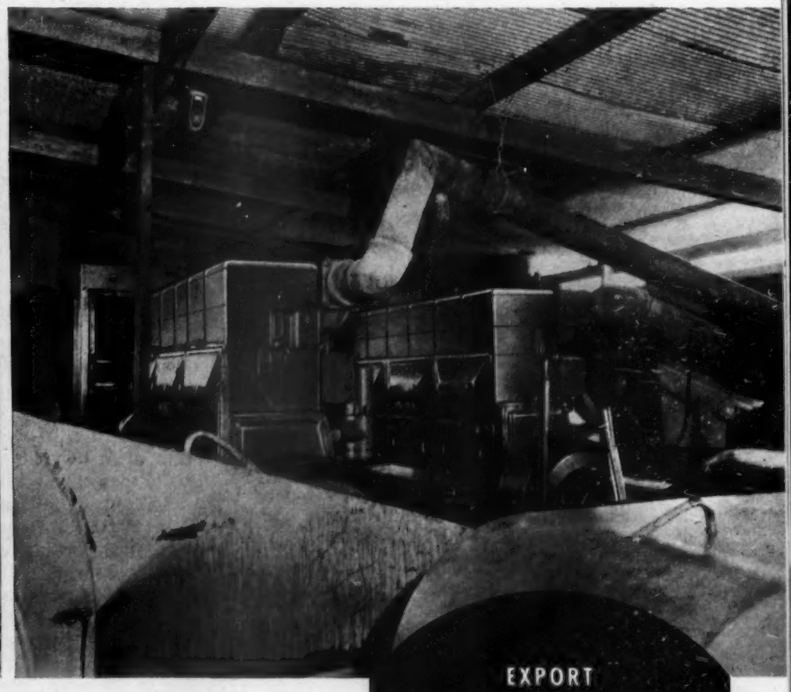
The short-range estimate tells us whether we

(Continued on Page 86)

DIESELS

APPLICATION FOR ROTARY RIG DRIVES





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International

Lack of Steel and Skilled Drillers Big Obstacle to German Oil Search

The author of this review of the European petroleum situation spent many years representing an American equipment supplier in Rumania and other eastern European countries. His long service in Rumania, Austria, Poland, Hungary, the U.S.S.R., and other smaller producing countries gives him background on actual operating conditions and qualifies him to speak with finality on the situation in the area discussed.

THERE has been considerable comment in regard to the possibilities of Hitler gaining vast oil supplies should the Nazi armies succeed in penetrating to the Caucasus, Iran, or Iraq.

Nazi propaganda channels have recently claimed that the Caucasus fields would be put back into complete operation within 30 days after occupation. If they had said 30 months, it would have been regarded by the writer as being an optimistic statement.

The reasons for this conclusion are manifold, but two main factors which would work to the disadvantage of the Nazis would be (*a*) lack of modern drilling equipment for deep wells and (*b*) lack of skilled engineers, drillers, and production men.

Germany, although a manufacturing country, is not a big producer of oil-field equipment. There are, it is true, many manufacturers who have tried to turn out oil-field materials, for many years. Their equipment always has been found to be based on American designs already obsolete.

In Rumania, a country very largely under complete economic domination by Germany, and in which operating companies were forced to purchase as much German equipment as possible, up to 1940 the vast majority of drilling materials were American. The few items of German equipment used were mainly traveling and crown blocks, but these and the few rotary tables, pumps, and steam engines, had all been sold at very low prices, mainly on a return-if-not-satisfied basis.

It was very easy to pick out the designs of the American equipment which had been copied by the European manufacturers, and in fact one large manufacturer bought steam engines and pumps of one of the largest American equipment houses, for the purpose of copying them.

Inevitably it was found that the European manufacturers, although copying American designs faithfully, had not been successful in putting the right alloy steel in the right places, and, as a result, the equipment generally broke down at a very early stage.

This same state of affairs also applies to attempts by Rumanian, Polish, and Czechoslovakian equipment manufacturers.

The efforts to manufacture tool joints and drill pipe for use in the 10,000-ft. wells drilled in Rumania, under comparatively easy formation conditions, and in Poland to much shallower depths, but in hard and steep-dipping strata, often proved disastrous. Well after well was junked, or protracted fishing jobs resulted, as a result of Rumanian and Polish operators using European drill pipe, tool joints, drill collars, or rock bits.

Every effort was made by European manufacturers to study American equipment which goes to make up modern rotary-drilling strings. Exhaustive analyses were made of steel used, but the heat treatment invariably beat them. In this connection the writer recalls a long conference at the Lemberg Technical Institute, which he was requested to attend. The Polish oil industry had been forced to use tool joints made in Poland, with the inevitable results. The very efficient and well-equipped State Testing Bureau had been consulted, representatives being sent to the United States to study methods of the great oil-field machinery-manufacturing plants, and every possible test was made on American tool joints to extract the secrets of successful modern deep-well materials. All to no avail, however, and the writer will never forget the utter bewilderment plainly expressed by very capable and efficient engineers, who—like the Germans and other imitators of American equipment—found themselves out of their depth.

Rumanian Equipment Blockaded

The British blockade put a stop to all Rumanian imports of American oil-field materials in 1940, and since the Nazi occupation of that country in October 1940, crude production has continued to decrease rapidly, in spite of opening up many flowing wells, to obtain greater output.

Due to the policy of the Rumanian Government prior to 1940, the oil operators were given very small proportions of the values of their oil exports, in free foreign currency. Long before the writer left Rumania, in early summer, 1940, the shortage of good American equipment had become acute.

There can be no possible doubt, that in spite of a reported increase in footage drilled, the rapid decline in Rumanian crude output is due mainly to lack of quality drilling equipment.

The Poles, Rumanians, and Russians have less excuse for their failure to turn out quality deep-drilling materials, as there were, at least, oil fields with production from varying depths available, in which to test new designs.

In regard to the Russians, it is significant that, after years of endeavoring to copy American designs, followed by several years during which mainly German equipment was bought—with resultant considerable lag behind the production schedule—more than $10,000,000 worth of American drilling machinery has been bought and shipped during the past 12 months.

There is no doubt in the mind of the writer that the Nazis will not be able to produce equipment capable of drilling to depths of 6,000 ft. and more, in many of the Caucasian oil fields. Possibly many shallow wells, destroyed by the Soviets before retreating, may be redrilled, provided these shallow areas are not already too near exhaustion. The majority of present Caucasus production comes from the deep sands at Grozny and Oisunger on the northern oil belt, and at Baku, Siazan, Ilyich Bay, Artem Island, North Surakhany, and other Azerbaidjan fields, in which the shallower producing formations are now nearly exhausted.

Personal experience during the past few years of German oil-field equipment, and the continued decline of production in Rumania—a country far from being depleted of possible potential producing areas—would go to show, conclusively, that the Germans just cannot produce deep-well equipment with which they could drill new wells.

The other factor—lack of skilled labor—is also a great disadvantage. At the moment, occupied oil-field areas in Poland, Rumania, Austria, etc., are being worked by native engineers and drillers. Rotary drilling has never been successful in Poland, due to lack of good American equipment, so that skilled engineers and drillers could not be drafted from that country to the Caucasus.

The Rumanian and Austrian oil industries have been mainly built by foreign interests, and until they were thrown out by the Nazis, engineers from America, Britain, the Netherlands, and other foreign countries controlled and supervised the majority of operations. The international oil companies were able to communicate details of new operating methods to subsidiaries in Rumania, particularly, and the foreign engineers made frequent study visits to the United States to keep abreast of modern developments.

While many native engineers were found to be competent well men, it was only by strict supervision by foreign engineers, or by the imparting of knowledge and advice by foreign engineers, that natives were able to conduct successful deep-drilling operations, using competent American equipment.

With the foreigners no longer in control, and knowing the country, and its people, intimately, the writer is of the opinion that, with poor European equipment and with no foreign engineers to advise, the few competent Rumanian engineers are finding the struggle too hard.

For many years past, Rumania has never had more than 60 drilling rigs in operation, so the number of competent drillers and helpers available is small. The Rumanian oil industry must be maintained and it is difficult to imagine where the Nazis will find more than a few skilled men who could be sent to drill new wells in the Caucasus.

The lack of competent foreign supervision cannot be rectified by employing German engineers, as, with no deep-drilling industry of its own, the number of capable well men in Germany—or of competent drilling engineers of German descent available in Europe today—is limited.

Plans Drafted Standardizing Containers Used in Industry

By HENRY D. RALPH

WASHINGTON, D. C., Dec. 29.—A comprehensive plan for the standardization, conservation, and substitution of containers used by the petroleum industry has been drafted by the industry subcommittee on containers and approved by the Office of Petroleum Coordinator.

Questionnaires are also being sent to all members of the industry asking their 1941 uses of the various types of approved containers, their 1942 requirements, and possibilities of using substitutes. Answers to these questionnaires will form the basis for allocation of steel for manufacture of containers for marketing petroleum products.

Hereafter special packages will not be available, and all shipments must be made in the standardized containers. These standardized containers are seven types of steel drums, eight types of oil cans, four grease cans, and four insecticide cans. The plan does not deal with glass, fiber, wood, or other materials which might be used for oil containers.

In addition to limiting the types of containers available, definite restrictions are put on their use. For example, 1-qt. cans are limited to a ratio of eight to one 5-qt. can used in marketing a given company's lubricating oil. Minimum deposit fees are set for returnable containers in order to insure prompt reuse and allocations will be based on the use of drums for transportation only and not for storage.

The plans and questionnaire were approved by Coordinator Ickes and by the Chief Counsel of OPC, and the regional container subcommittees are asked to see that effective steps are taken by the industry to put them into effect as soon as possible.

Conservation Plan Outlined

The plan for conservation of containers makes a large number of changes in the industry's marketing practices, and reads as follows:

"1. That consumers, resellers, and oil companies become more conscious of the need for prompt emptying of drums and other containers that must be reused as often as possible to save materials.

"2. That buyers of petroleum products in reusable containers should empty the containers immediately upon receipt and return empty containers to the petroleum supplier with all bungs and cover plates in place.

"3. That petroleum companies retain title to their reusable containers and urge their prompt return.

"4. That petroleum companies should require the following deposits on reusable containers at the time of sale of products delivered in containers:

"(*a*) A minimum of $4 for the 55-gal., 18-gage light iron barrel and the 400-lb. grease drum.

"(*b*) A minimum of $3 for the 30-gal. light iron barrel.

"(*c*) A minimum of $2 for the 14-gal. barrel and the 100-lb. grease drum.

"(*d*) A minimum of $10 for the I.C.C. 50-gal. heavy steel drum.

"5. That, in all ordinary circumstances, reusable containers should be returned to the petroleum companies within a 30-day period, but in no instance should containers be outstanding more than 90 days.

"6. That, where reusable containers move to outside distributors too distant to be returned to the refinery packaging the product, the refiner should work out an adequate sales charge to the distributor and that distributor, in turn, in selling the product to his customers, should require the same character of deposit and the same return of containers that the refiner requires on his direct sales. Such distributor must see that said containers are returned to use as promptly as possible by disposing of them to near-by refiners.

"7. That loaning of iron barrels of any kind or character for storage purposes be eliminated immediately. Any such barrels now on loan should be recalled.

"8. That users of drums should:

"(*a*) See that all bungs and cover plates are tight on empty drums and return the drums to the petroleum companies with these bungs in place.

"(*b*) Advise all their employes of the necessity of prompt return of these containers when empty.

"(*c*) Caution all handlers of this equipment that these containers are essential to national defense and must not be abused or dropped unnecessarily, or remain out exposed to the elements.

"(*d*) Standardize on a limited number of product brands necessary to meet their requirements, and accept shipments on a uniform flow basis, in this way avoiding the tying up of packages.

"9. That shippers of the drums should caution all customers against overbuying; also they should attach labels or tags to all barrels, calling attention to the importance of proper preservation and prompt return in the interests of national defense.

"10. That marketers should extend the delivery of fluid petroleum products other than canned motor oils direct to consumer outlets in bulk, in lieu of steel barrels wherever possible.

"11. That marketers should institute a careful inventory control of filled and empty barrels to eliminate surplus stocks.

"12. That canned motor oil should be sold on the basis of eight 1-qt. cans to one 5-qt. can. This means that 37½ per cent of the canned oil volume will move hereafter in 5-qt. containers in lieu of less than 20 per cent now moving in 5-qt. containers.

"13. That 5-qt. containers should hereafter be shipped on a basis of six 5-qt. to a carton in lieu of the customary shipping package of four 5-qt. containers to the carton.

"14. That present bulk lubricating-oil facilities should be utilized to the best possible advantage."

The recommendation on substitution is in two parts: (1) that glass vessels should be used when possible as a conservation measure in replacement of copper and other metal measuring devices at service stations; and (2) that wooden barrels be considered wherever practicable in the export trade, and in the domestic market for greases, unfiltered compounded cylinder oils and petrolatums.

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May Revise California Allotment

By L. P. STOCKMAN

LOS ANGELES, Calif., Dec. 30.—The production committee of District 5 and the conservation committee along with the umpire's staff have been preparing the groundwork for the new conservation plan that will become effective January 1. It may be a month or so before the entire plan is put into operation as there are a number of provisions that cannot become operative until more data are available.

Because of recent developments it is quite possible that the petroleum coordinator may revise California's allotment which raised the allowable production of the state 33,000 bbl. daily for the month of January. The new conservation plan and sound operating procedure prohibit any additions to stocks at this time and it is felt that the allowable assigned by the petroleum coordinator will result in increases to storage.

Reflecting a combination of voluntary curtailment and inability to move production because of interruption of water transportation, state production has been reduced to 592,000 bbl. daily. This is the lowest point reached by California in a long time and is 19,000 bbl. daily below the December allotment of 611,743 bbl. The voluntary reduction in production was in response to a telegram sent each producer by E. E. Pyles a few days ago. This telegram stated, "Because of interruption of normal operations of tanker service the industry faces a critical situation. Therefore the production committee requests that you immediately reduce your production to or below the allocated schedule furnished you for the month of December."

Disruption of tanker service forced operators in the coastal district to shut in about 21,550 bbl. daily in several fields in the last day or so. Capitan, which normally produces 2,250 bbl. daily, has been shut down entirely. Other reductions include 900 bbl. daily at Padre Canyon, 3,000 bbl. daily at Rincon, 2,300 bbl. daily at San Miguelito, 2,100 bbl. daily at Gato Ridge, 7,000 bbl. daily at Santa Maria Valley and 4,000 bbl. daily at Ventura Avenue. It is quite likely that additional reductions will be made in the coastal district fields as marketers do not like the idea of anchoring tankers in the open ocean while loading as it would be too good a target.

Japanese submarines have chased and shelled a number of vessels on the Pacific Coast recently. The 75,000-bbl. tanker Emidio, of General Petroleum Corp., a subsidiary of Socony-Vacuum Oil Co., Inc., was torpedoed and shelled 200 miles north of San Francisco and subsequently sunk. The 75,000-bbl. tanker Montebello, of Union Oil Co., with a cargo of gasoline, was torpedoed December 23 and sunk near Estero. The tankers H. M. Storey and J. C. Fitzsimmons, of Standard Oil Co., and the Agwiworld and Larry Doheny, of Richfield Oil Corp., were attacked but escaped.

Dow and Brown Will Aid PIC Chairman

WASHINGTON, D. C., Dec. 29.—Fayette B. Dow and Russell B. Brown have been appointed nonsalaried assistants to W. R. Boyd, Jr., chairman of the Petroleum Industry Council for National Defense.

While each will perform general functions as assistants under direction of Mr. Boyd, Mr. Dow

FAYETTE B. DOW

RUSSELL B. BROWN

will be associated chiefly with refining, transportation and marketing activities. Mr. Brown will deal with problems related to production and priorities.

Mr. Dow has for many years been general counsel and Washington representative for the National Petroleum Association, the Western Petroleum Refiners Association and the Pennsylvania Grade Crude Oil Association.

Mr. Brown is general counsel for the Independent Petroleum Association of America and has represented the organization in Washington for 12 years.

New Form Issued for Defense-Plant Rating

WASHINGTON, D. C., Dec. 29.—The Office of Production Management is now distributing Form PD-200 which must be used in applying for a project rating on any new plant or major addition, such as a refinery or a new unit.

Heretofore, project ratings P-19-A have been issued on application filed by letter but the new form must now be used. Accompanying it is Form PD-200-A which calls for a list of materials to be used in the project. Materials should be listed in the form in which they reach the project site rather than broken down into component parts, such as steel plants. Form PD-1 should still be used for individual items where a project rating is not called for.

Wilmington Wells Protected Against Bombing

COMPANIES with flowing wells in the harbor area of the Wilmington field in California have taken measures to guard against bombing damage. Sandbags are piled around the christmas trees, and automatic bottom-hole chokes are placed in the tubing of the wells. These chokes are regulated so that they will be closed by excessive differential pressure if the christmas trees should become damaged in a way that would release oil at an unrestricted rate.

Several supply firms are at present engaged in designing new equipment that will pack off the space between tubing and casing, and will anchor the tubing string to the casing so that it cannot be dropped or blown out of the well in case the christmas tree is blown off. This anchor would be installed a short distance below the surface.

ANNUAL INDEX

The Oil and Gas Journal's index of material published during 1941 appears in this issue, starting on Page 91. The index is crossindexed as to subject matter, and includes a compilation of material by authors.

High Priorities Granted On Caribbean Refinery

WASHINGTON, D. C., Dec. 29.—OPM announced that a special order has been issued by the Priorities Division giving high preference ratings to the Anglo-American Purchasing Co. for a specified list of materials for use in operation of a British refinery for aviation gasoline in the Caribbean area to avoid the necessity of handling individual applications. No further details were announced.

Tank-Car Deliveries to East Coast Decline Again

WASHINGTON, D. C., Dec. 27.—Thirteen operating companies in the Atlantic seaboard area moved 1,742 cars of crude and products into the territory by railroads during the week ended December 20, they reported late last week to the OPC.

This represents an average daily movement of 249 cars, compared with a daily average for the preceding week of 266 cars. In terms of oil and its products, assuming an average load of 225 bbl. per car, daily deliveries for the week last reported amounted to 56,025 bbl. For the week ended December 13, the average was 59,850 bbl.

Shipments by companies for the week of December 20 were: Atlantic Refining Co., 159 cars; Cities Service Oil Co., 0; Gulf Oil Co., 167; Pan American Petroleum & Transport Co., 70; Pure Oil Co., 58; Shell Oil Co., Inc., 226; Sinclair Refining Co., 69; Socony-Vacuum Oil Co., Inc., 0; Standard Oil Co. of Kentucky, 76; Standard Oil Co. of New Jersey, 615; Sun Oil Co., 14; Texas Co., 119; Tide Water Associated Oil Co., 160 cars.

Leaves Carter to Associate With McKamie Enterprise

Roger A. Howe, of Shreveport, La., has resigned as production superintendent of Carter Oil Co.'s southern division. He terminates his 30-year association with Carter and other Standard Oil Co. (N. J.) affiliates January 1, to become vice president and general manager of the newly organized McKamie Gas Cleaning Co., formed to purchase and process sour gas from the McKamie field in Lafayette County, Arkansas.

The new concern will install a "sweetening" plant to purify McKamie gas by removing the hydrogen sulfide; also a gasoline-absorption plant to process the purified gas and manufacture casinghead gasoline and by-products. Both plants will be located adjacent to the field.

Mr. Howe, 51, is a native of Ohio. He began his career in the oil industry as a day laborer with Ohio Oil Co., in 1910, and has literally grown up in the oil business. He was transferred to Standard Oil Co. of Louisiana in 1911, and with the exception of two short breaks in service, has been continuously employed by various Standard affiliates since that time.

He became Standard Oil Co. of Louisiana assistant general superintendent in charge of gasoline plants in 1922, and was elevated to company general superintendent in 1936.

When the company's producing operations were transferred to the newly organized Louark Producing Co. in 1939, Mr. Howe became associated with the new company as production superintendent, and continued in this capacity in May 1941 following the Carter Louark merger when Louark producing operations were incorporated into Carter's southern division.

Thompson Joins OPC

Glenn P. Thompson, of Austin, Tex., has been employed by the federal Government as chief production and development analyst in the District 3 Office of the Petroleum Coordinator, in Houston, Tex. Formerly with the Texas Petroleum Council, Mr. Thompson later accepted a position with the Texas Railroad Commission where he became chief supervising accountant in the Oil and Gas Division. He had been with the commission for 7 years when he accepted the federal appointment. Mr. Thompson received his education in the public schools of Quincy, Ill., and at the University of Illinois. He is 37 years of age, married, and has two daughters.

Time Lost in Blackout Held Not Hours Worked

WASHINGTON, D. C., Dec. 30.—Time spent by employes on the premises of an employer during blackouts or air-raid alarms where no work is done need not be compensated for as "hours worked," Acting Administrator Baird Snyder, Wage and Hour Division, U. S. Department of Labor, declared last week.

Several inquiries on this point had been received by Mr. Snyder from the West Coast, he said in explaining basis for the decision.

THE MARKETS*

CRUDE OIL: The underlying tone of the crude-oil market remains strong in most sections of the country. Interruptions of tanker deliveries between certain fields and refineries on the Pacific Coast has terminated normal operations there.

REFINERY PRODUCTS: Lend-lease purchasing on the Gulf Coast and at refineries on the East Coast has tended to absorb all surplus materials Mid-Continent and Gulf Coast refiners report strong demand from regular contract customers.

TANK WAGON AND POSTED DEALER: There were no changes of a general character again this week.

FINANCIAL: Trading in oil securities suffered last week from the rigid federal control implied by Order M-68. Average of 30 representative stocks for the week ended December 27: High, 25.61; low, 23.68; close, 24.04. Week ended December 20: High, 26.45; low, 24.91; close, 25.18.

*Detailed information in the market section.

Natural Gas News

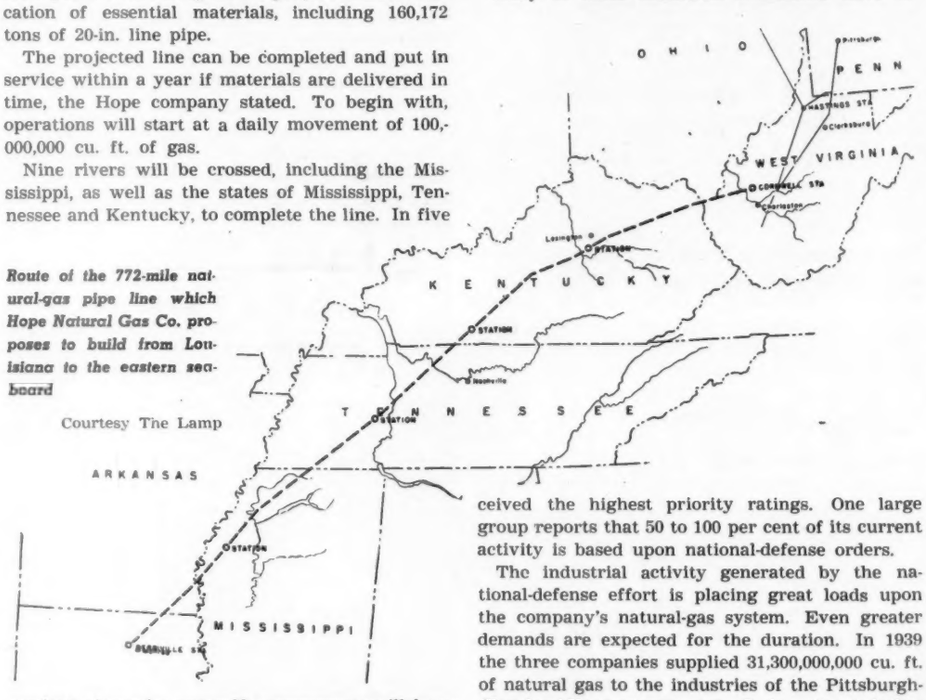
Hope Plans to Build 772-Mile Line in 1942

Hope Natural Gas Co., subsidiary of the Standard Oil Co. of New Jersey, plans to build immediately a $30,000,000 pipe line extending 772 miles from West Virginia to the natural-gas reserves of the Louisiana and Texas fields.

The subsidiary company has applied to OPM for a preference rating on the project and for allocation of essential materials, including 160,172 tons of 20-in. line pipe.

The projected line can be completed and put in service within a year if materials are delivered in time, the Hope company stated. To begin with, operations will start at a daily movement of 100,000,000 cu. ft. of gas.

Nine rivers will be crossed, including the Mississippi, as well as the states of Mississippi, Tennessee and Kentucky, to complete the line. In five stations along the route 23 compressors will keep the gas moving steadily to market. Two sections of the line, one 70 and the other 80 miles long, will require special protection against corrosion.



Route of the 772-mile natural-gas pipe line which Hope Natural Gas Co. proposes to build from Louisiana to the eastern seaboard

Courtesy The Lamp

The Hope company, together with the East Ohio Gas Co. and the Peoples Natural Gas Co., form an integrated system that supplies natural gas to an area of concentrated industry in Ohio, Pennsylvania, and West Virginia. The three companies serve approximately 713,000 consumers of all kinds, including more than 700 industrial customers.

Many of these industrial consumers have received the highest priority ratings. One large group reports that 50 to 100 per cent of its current activity is based upon national-defense orders.

The industrial activity generated by the national-defense effort is placing great loads upon the company's natural-gas system. Even greater demands are expected for the duration. In 1939 the three companies supplied 31,300,000,000 cu. ft. of natural gas to the industries of the Pittsburgh-Cleveland-Youngstown area. It is estimated that this figure for 1941 will jump to 48,200,000,000 cu. ft. Two large industrial units, the Aluminum Co. of America and the Babcock & Wilcox company, alone accounted for an increase of approximately 260,000,000 cu. ft. over last year.

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Panhandle Eastern Prepares For Issuing Securities

WASHINGTON, D. C.—Panhandle Eastern Pipe Line Co., Kansas City, filed a registration statement with Securities Commission covering $10,000,000 of 3 per cent first mortgage and first lien bonds, Series C, due 1962, and 150,000 shares of cumulative preferred stock $100 par value.

The company said it intended to offer certain shares of the new preferred to holders of 63,566 shares of its outstanding common stock for exchange at a rate of one share of preferred for each 5⅓ shares of common held. Holders of 743,801 shares of common have waived preemptive rights to subscribe for the new preferred, the statement said.

The bonds and those shares not taken by common stockholders will be sold through competitive bidding. The dividend rate on the preferred was left for later disclosure.

Panhandle proposes to use proceeds from the bonds and preferred to redeem its outstanding Class A preferred stock and for the purchase from Columbia Gas & Electric Corp. of all of the outstanding securities of Michigan Gas Transmission Corp. and Indiana Gas Distribution Corp. and from the Ohio Fuel Gas Co. its natural-gas pipe lines in Indiana and Ohio. The balance will be used to pay for construction work already authorized.

Refinery News

Standard Oil Co. of Ohio's 100-Octane Plant Ready

A new aviation-gasoline plant has been placed in operation at the Toledo refinery of the Standard Oil Co. of Ohio, the first to be completed since the greatly increased need for 100-octane aviation gasoline was announced in Washington last August and the only such plant between the Atlantic seaboard and Chicago. The plant utilizes the most modern process in the production of high octane gasoline, reversing the process ordinarily used in refining oil (sulfuric acid alkylation).

Outstanding features of the plant are a 30,000-bbl. welded steel spheroid, a huge spheroid tank 77 ft. in diameter and 57 ft. high, and the 125-ft.-high fractionating towers. Dr. F. J. Sanders, superintendent of the refinery, said that when in full production the plant will be operating 24 hours daily, 7 days a week. It is now operating at two-thirds capacity, and the number of barrels produced is a defense secret.

Production of Butadiene Started Near Houston

HOUSTON, Tex.—Shell Oil Co., Inc., announced last week it had begun production of butadiene, principal ingredient of synthetic rubber, at its Deer Park refinery near here. The plant has a capacity of more than 5,000 tons a year.

The synthetic rubber manufactured with butadiene contains approximately 75 per cent of the product.

Standard of Louisiana Plans $17,000,000 Project

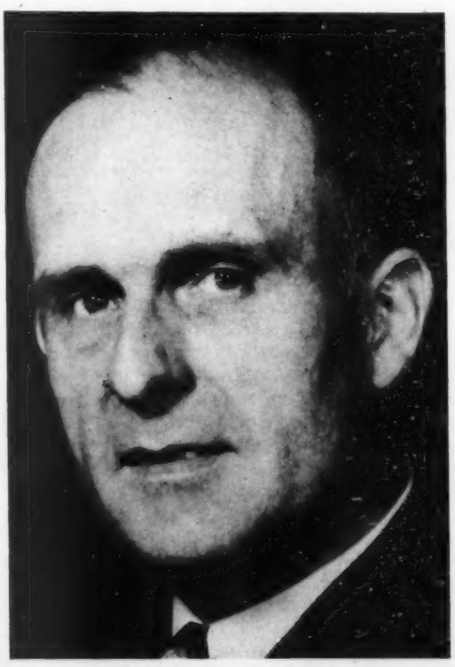
BATON ROUGE, La.—Plans for a $17,000,000 construction program which will double the capacity for producing components of 100-octane gasoline by Standard Oil Co. of Louisiana at the company's refinery here were announced last week.

The new additions will bring the total expansion program for 1941 and 1942 thus far to $50,000,000.

Dr. Frolich Elected President of A.C.S.

NEW YORK.—Dr. Per K. Frolich, director of the chemical division, Esso Laboratories of the Standard Oil Development Co., Elizabeth, N. J., has been elected president of the American Chemical Society for 1943.

Dr. Frolich, who is known for his work in the development of synthetic rubber, will take office as president-elect January 1, 1942, when Dr. Harry N. Holmes, head of the department of chemistry at Oberlin College, becomes president, succeeding Prof. William Lloyd Evans of Ohio State University.



DR. PER K. FROLICH

PROGRAMS AND MEETINGS

Priorities Clinic Will Be Held in Tulsa, January 6

OPM priorities experts and specialists will hold a state-wide "priorities clinic" in Tulsa beginning at noon Tuesday, January 6, according to W. D. Teubner, vice chairman of the Tulsa Chamber of Commerce industrial department. All meetings will be held at the Hotel Tulsa.

The clinic, arranged by the chamber, will be under the direction of the Division of Priorities, OPM, and Mason Manghum, Washington, D. C., head of the industrial contact and education unit, Priorities Division of OPM, will be the official in charge of the program.

A general discussion of priorities problems will follow the luncheon, after which the meeting will be thrown open to questions from the floor. Several smaller group discussions will follow.

OPM officials who will make up the panel of speakers include A. L. Williams, chief of production-requirements section; Jerome Law, chief of maintenance and repair section; and James E. Hughes, OPM priority specialist assigned to the Office of Petroleum Coordinator.

Several oil organizations have indicated that they will participate in the clinic, and representatives of these groups are helping to develop plans for the program. These include the Independent Petroleum Association of America, Mid-Continent Oil and Gas Association, Western Petroleum Refiners Association, Mid-Continent Purchasing Agents Association, Natural Gasoline Association of America, and Oklahoma Stripper Well Association.

Requests for reservations must be mailed to Industrial Manager Thomas W. Finney of the Tulsa Chamber by Monday, January 5. Luncheon will be $1 per plate, and tickets can be purchased only at the Hotel Tulsa. Preference will be given in seating at luncheon to those persons who have reservations.

Eastern A.P.I. Members Will Meet in Pittsburgh

The regular spring meeting of the eastern district, American Petroleum Institute Division of Production, will be held in Pittsburgh, Pa., at the William Penn Hotel, April 9-10, 1942. Further details of the meeting, including data on registration, entertainment, etc., will be announced later. J. V. Goodman, Equitable Gas Co., is chairman of the arrangements and entertainment committee; M. G. Gulley, Gulf Oil Corp., is chairman of the program committee; V. F. Bowyer, Peoples Natural Gas Co., is chairman of the registration committee, and W. E. Ferguson, Ohio Fuel Gas Co., Columbus, Ohio, is chairman of the publicity committee.

Kentucky Association Reelects

The Kentucky Oil and Gas Association held its twelfth annual meeting at the Brown Hotel, Louisville, Ky., on December 13. All officers were reelected for 1942 with a few changes and additions to the board of directors. The meeting was addressed by Earl D. Wallace, a former president of the association, now a member of District 2 committee on production, Office of Petroleum Coordinator. He asked the cooperation of the association in assembling data for study by the committee, especially as to the need for a better price of oil in view of the many abandonments of stripper wells in Kentucky.

The meeting voted unanimously to sponsor an adequate conservation measure in the 1942 Kentucky Legislature.

Natural-Gas Committees Meet to Plan National Convention

In preparation for the thirty-seventh annual natural-gas convention, American Gas Association, New Orleans, La., May 4-7, several committees of the Natural-Gas Section, A.G.A., met in Kansas City, Mo., last month and drafted plans for a program which will endeavor to solve the war-emergency problems of the industry. It is planned to have full discussions on these problems as they apply to production and transmission of natural gas as well as to the sale of the product.

California Oil and Gas Association Elects

Ralph B. Lloyd, president of the Lloyd Corp., was elected president of the California Oil and Gas Association at the December meeting of the association's board of directors. A. C. Mattei, president, Honolulu Oil Corp.; W. J. Reid, president, Hancock Oil Co., and Reese H. Taylor, president of Union Oil Co. of California, were elected vice presidents. C. A. Johnson, president of the Holly Oil Co., was elected treasurer. F. E. Foster continues as managing director, and D. S. Kilgour continues as assistant manager.

Oil and Gas Men on Safety Conference Program

Three representatives of the petroleum industry will appear before the Industrial Safety section of the fourth annual Southern Safety Conference at the Roosevelt Hotel in New Orleans, La., February 22, 23, and 24. P. G. Mathews, foreman, United Gas Pipe Line Co., Beaumont, Tex.; A. G. Helmke, Standard Oil Co. of Louisiana, Baton Rouge, La., and William Grant, Jr., assistant chief safety engineer, Humble Oil & Refining Co., Houston, Tex., will each discuss a phase of safe operation in production, transportation, and refining of petroleum and its products.

Louisiana Engineers to Meet

The 1942 annual meeting of the Louisiana Engineering Society will be held at the St. Charles Hotel, New Orleans, La., on January 9 and 10. An interesting program has been arranged, including diversified techincal paper, prominent speakers, inspection trips and entertainment features.

Scouts Call Off Convention

Because of the war, the executive committee of the National Oil Scouts and Landmen's Association has voted to call off plans for a 1942 convention. The bylaws were amended to permit the officers to serve until June 1943. They comprise: J. W. Serby, Houston, Tex., president; A. W. Rickets, Mattoon, Ill., vice president; C. J. Bradley, Tyler, Tex., chairman of the board; Ed C. Harmon, Dallas, Tex., yearbook editor, and A. B. Schuler, Longview, Tex., secretary-treasurer.

Oklahoma Utilities Association Elects; Sets Meeting Dates

At a meeting last month of the board of directors of the Oklahoma Utilities Association held in Tulsa, officers and directors for 1942 were elected. W. L. Woodward, Zenith Gas System, Inc., Alva, Okla., was named president; J. C. Happenny, Oklahoma Power & Water Co., Sand Springs, Okla., was named first vice president; E. C. Loullian, Consolidated Gas Utilities Corp., Oklahoma City, Okla., was elected second vice president; B. M. Lester, Oklahoma Gas & Electric Co., Oklahoma City, was made treasurer, and Miss Kate A. Niblack, of the association, was named secretary.

The convention chairman and committee were also appointed for the 1942 convention, which is to be held March 23-24 in Oklahoma City at the Biltmore Hotel.

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DEATHS

JOHN N. MEYER, 66, who for several years was master mechanic of Kendall Refining Co., Bradford, Pa., until his retirement due to ill health, died last week at his home in Tuna, Pa. He had been in ill health for the past 5 years. His widow, a son and three daughters survive.

CHARLES A. PASSMORE, oil producer in the Bradford, Pa., field, died last week at his winter residence in St. Petersburg, Fla. His death followed a week's illness. Mr. Passmore went to Bradford in 1895, and had been associated with the oil business ever since. His widow survives.

JAMES ALEXANDER WALES, 45, president of the McColl-Frontenac Oil Co., of Montreal and Toronto, Canada, died recently at Montreal.

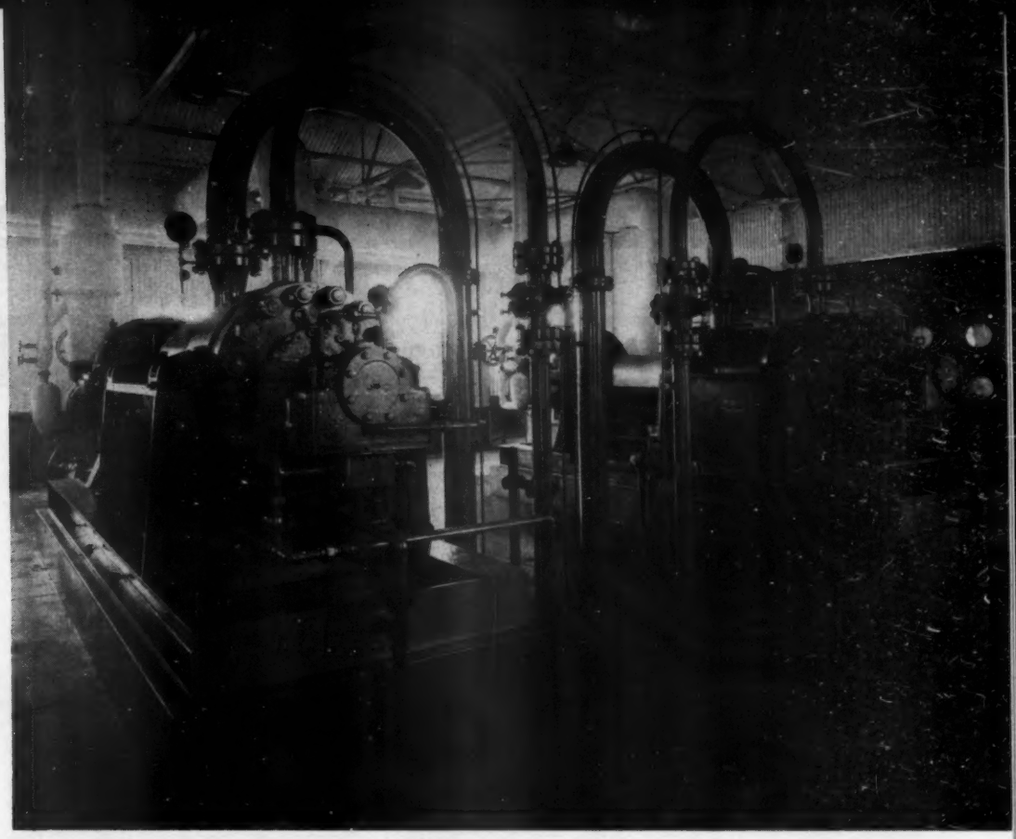
BEN M. CURTIS, 56, Tulsa oil operator, died Saturday at his home in Tulsa. Mr. Curtis was born in Topeka, Kans., and came to Tulsa in 1913. He entered the oil business 25 years ago and had been an independent operator since that time. For the past 3 years he had been active in Illinois. He and Mrs. Curtis only recently observed their silver wedding anniversary.

CHARLES MOLER, 62, oil-field drilling contractor, was killed Christmas eve when struck by a truck in Wichita Falls, Tex., his home. Besides his widow, he is survived by a son.

N. W. CASSEL, vice president and secretary of Harrisburg Steel Corp., Harrisburg, Pa., died at Johns Hopkins Hospital, Baltimore, Md., on December 22. Mr. Cassel was born in 1884, and became associated with Harrisburg Pipe & Bending Co. in 1904, and his association with this company, whose name was changed in 1935 to Harrisburg Steel Corp., continued until his death.

WILLIAM THOMPSON, 35, Mount Vernon, Ill., oil-company engineer, was fatally injured in an automobile accident near Irvington, Ill., last week. He was employed as designing engineer by Socony-Vacuum Oil Co.

J. W. PEAVEY, 30, independent oil promoter, Centralia, Ill., was killed when his automobile struck a tree near Benton, Ark., last week, as he was en route to spend the Christmas holidays with an uncle in Gladewater, Tex.



Single-cylinder steam pumps are used at the new La Gloria recycling plant for charging lean oil to the high-pressure absorber and reabsorber at pressures of 1,500 and 500 lb. per sq. in. Both the live steam and the exhaust lines are insulated to conserve energy. *Story starts on next page*

ENGINEERING & OPERATION

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JANUARY 1, 1942

LA GLORIA CONDENSATE-RECOVERY PLANT UNUSUAL JOINT ENTERPRISE

By Neil Williams ..... Page 30

The largest operation of its kind, the new condensate-recovery and recycling plant of the La Gloria Corp. will have a capacity of 225,000,000 cu. ft. daily. The field is located in Jim Wells and Brooks counties, Texas, and has a highly diversified ownership with 10 separate leaseholders and numerous royalty interests involved.

DIFFICULTIES OF COMPLETION OFFER CHALLENGE AT OLLA, LOUISIANA

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Completion practices at Olla, Louisiana, are in a state of evolution at the present time with operators seeking the best method of cementing casing to prevent sloughing of the formation. Several of the intricate cement jobs performed are described.

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La Gloria Condensate Recovery Plant Unusual Joint Enterprise

By NEIL WILLIAMS

OPERATIONS providing for the maintenance of reservoir pressures and recovery and distillation of condensate from high-pressure gas-producing horizons are under way in the La Gloria field, located in Jim Wells and Brooks counties, South Texas. In volume of gas to be processed, this project is the largest of its kind yet undertaken. It also is an outstanding example of a large-scale conservation program initiated in the very early development and productive stages of a field.

Installation of a processing plant for the extraction of condensate from the wet gas produced and for the return of the dry residue gas to the producing sands has been the essential phase of the project. Highly diversified lease and royalty ownership within the prospective limits of the productive reservoirs has made the pooling of interests and unitization of the field a major factor and prerequisite.

The plant, owned and operated by La Gloria Corporation under a life-of-property contract with leaseholders in the field, has facilities for handling more than 225,000,000 cu. ft. of gas daily. Operations cover two adjoining, unitized blocks totaling approximately 6,475 acres. Embraced in the unitization is a subdivision of lands adjoining the townsite of La Gloria, composed largely of tracts of 40 acres or smaller.

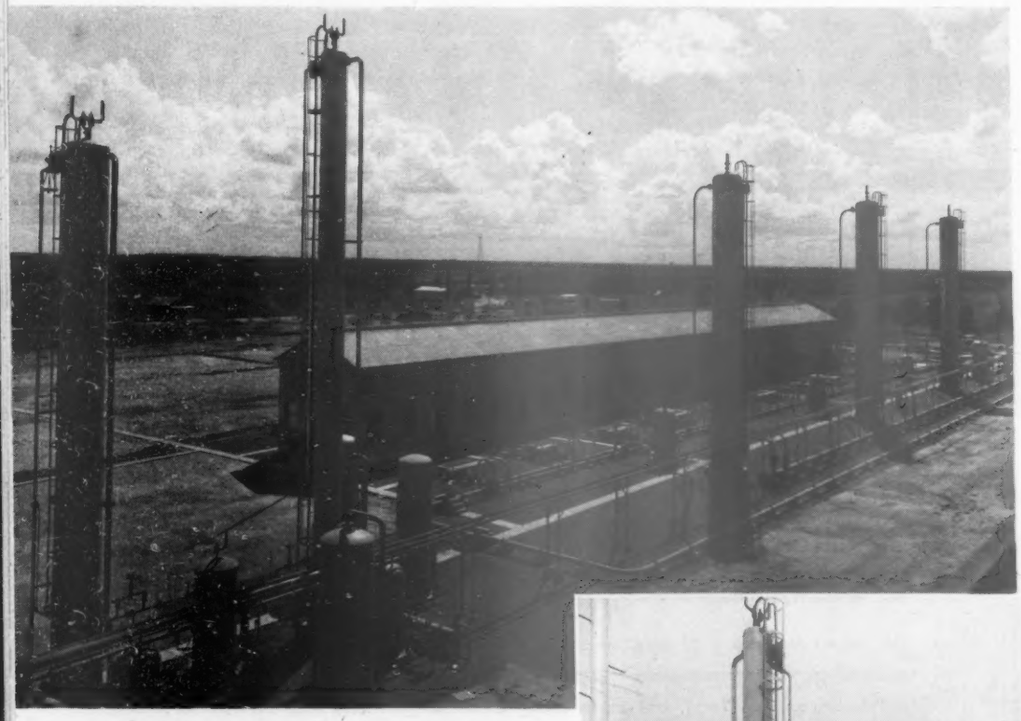
Participating in the blocks are 10 separate leaseholders and sundry royalty interests. Leaseholders are Magnolia Petroleum Co., Tide Water Associated Oil Co., Argo Oil Co., Ecleto Oil Co., Ohio Oil Co., Phillips Drilling Co., Navarro Oil Co., Robert T. Wilson, and jointly, Fidelity Oil & Royalty Co., R. A. Welch and Mound Co.

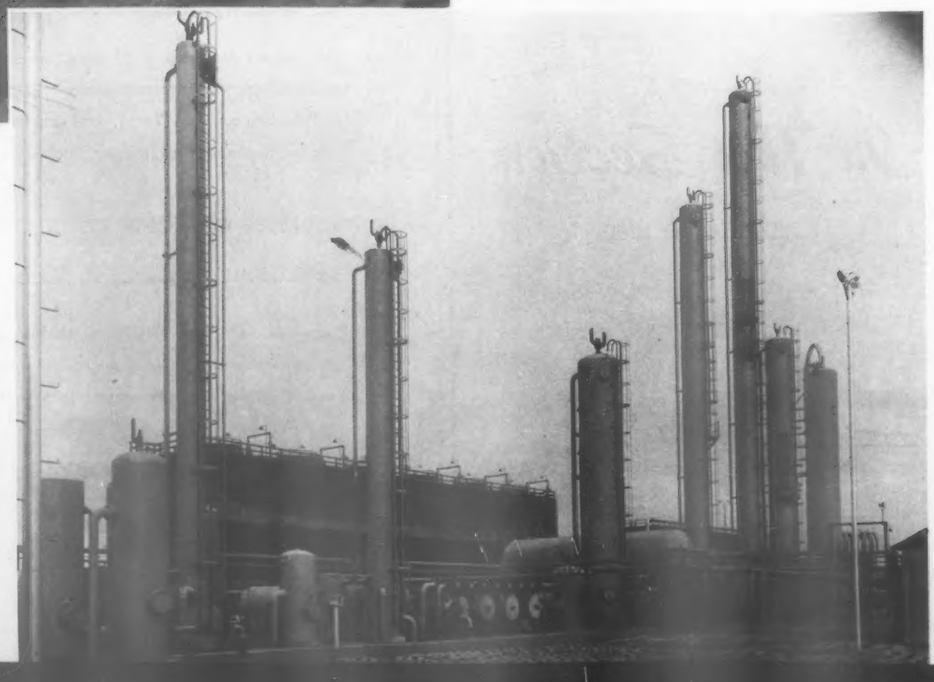
Administration of the affairs of the blocks is vested in the La Gloria Operators Committee, composed of representatives of the various lease interests. The committee is responsible for carrying out the development program, and operates the producing and input wells. La Gloria Corporation gathers the wet gas, processes it, and delivers the stripped residue gas through its return lines to the input wells.

Development Prior to Project

Development of the field prior to the initiation of the project consisted of four gas-distillate wells and one small oil producer, all of which were drilled by Magnolia Petroleum Co. The discovery well, located in about the middle of the present blocks, was completed in March 1939. It was drilled to a total depth of 7,560 ft., finding various sands, but for completion was perforated in what is now designated as the La Gloria sand at 6,560-70 ft., testing 5,250,000 cu. ft. of gas with 165 bbl. of distillate daily through a 5/16-in. choke. Working pressure on the tubing was 2,575 lb. with shut-in casing pressure 2,820 lb.

The second well, located about 2 miles west in a downdip position of the structure,





Left: General view from top of water-cooling tower showing compressor plant and three high-pressure absorbers, comprising the primary distillate-recovery and pressure-maintenance phase of operations, at right, and high-pressure and low-pressure reabsorbers at left. Below: Main units involved in secondary phase of operations. Picture shows, left to right, high and low-pressure flash tanks for liquid stream from inlet separator; high-pressure reabsorber; low-pressure reabsorber; heat exchangers; vapor-oil separator and still; depropanizer feed tank; depropanizer; deisobutanizer, and final fractionator

made a small oil well (25.2° A.P.I. gravity) by gas lift from a sand at 7,219-30 ft. The other three wells, all gas-distillate producers, were located in a row at 40-acre-spacing intervals north from the discovery well. The first well north of the discovery well was completed in sand at 6,085-91 ft.; the second at 7,066-80 ft., and the third at 7,000-10 ft. All were drilled to total depths below 7,200 ft., the deepest going to 7,348 ft.

With the drilling of these wells, the last of which was completed in January 1940, it became evident to the operators that they were dealing with a field of multiple sands and that production over a sizable area of the structure would be of the gas-condensate type. Consequently, before further drilling was undertaken, consideration was directed to the formulation of an appropriate development and production program to insure the most effective and conservative recovery of the condensate.

Structural and sand conditions were indicated to be unusually favorable for the adoption of reservoir pressure-maintenance operations. Geophysical surveys, supported by the record of the wells which had been drilled, pictured the structure as probably being a large domal-type anticline, more or less symmetrical in contour. Sands on the whole appeared to extend fairly uniformly and consistently over the structure. Producing horizons so far proved lie in the Frio-Vicksburg section.

La Gloria Corporation was organized by a group headed by Robert T. Wilson, of Corpus Christi, one of the leaseholders in the field, as president; Clyde H. Alexander, of Dallas, and John Sheerin, of San Antonio. These men had been associated together in the development of similar large-scale projects undertaken by the Coastal Recycling Corp. and the Gulf Plains Corp. in the Agua Dulce-Stratton area of Nueces County.

Attracted by the potentialities of the La Gloria field as a condensate reserve, they joined Magnolia Petroleum Co. and other leaseholders in that area in undertaking the pooling and unitization of the various interests within the prospective limits of the field. This work was started during the early summer of 1940. Unitization of the original block, totaling 4,765 acres, was completed by early autumn and construction of the plant then was started. Since then, an additional area of 1,710 acres has been unitized, forming the second block.

Four sands are embraced in the present pressure-maintenance operations. These sands, with their approximate depth range and shut-in (bottom-hole) pressures are:

Sand—	Approx. depth (ft.)	Shut-in pressure (lb.)
Brooks	5,700-6,000	2,400
Scott	5,900-6,150	2,460
Jim Wells	6,000-6,300	2,500
La Gloria	6,550-6,750	2,800

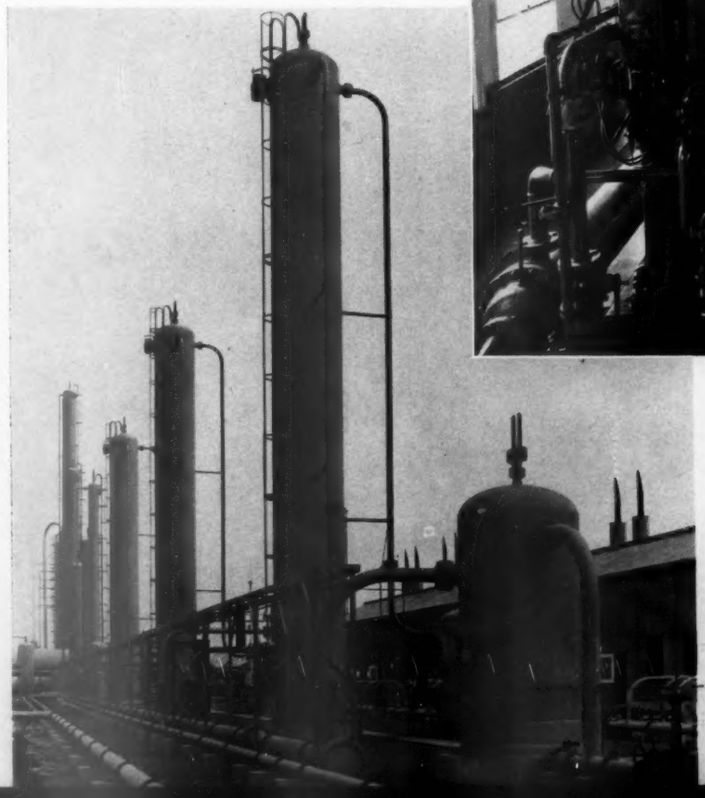
Other sands logged, some at intermediate levels, and some at greater depths, remain as potential reserves for continuation of plant operations as existing producing sands become depleted of condensate, or for future extension of operations. At least two of the latter sands, those below 7,000 ft. in which two of the original wells were completed, have been proved productive.

All Wells Reworked

Dry residue gas from the condensate recovery plant is being returned to the four sands through five input wells. Four of these have been provided by Magnolia Petroleum Co., these being the four original gas-distillate wells, including the discovery well, which were located along a north-south line at the approximate apex of the structure. All have been reworked for input service in their respective desired sands. The fifth input well has just lately been drilled. It is located approximately 2,000 ft. southwest of the most southerly of the other four input wells.

Each of these wells is completed in, and returns gas to two different sands. In the double completion of these wells and in their operation, methods similar to those initiated by Gulf Plains Corp. in its operations in the Stratton-Agua Dulce area (The Oil and Gas Journal, October 24, 1940, p. 35) are being followed. Three of the five wells are completed in the Jim Wells and La Gloria sands, while the other two are in the Brooks and Scott sands. Thus, each of the first two named sands has the equivalent of three input wells, while each of the other two sands has the equivalent of two input wells.

Returning gas to these wells are two input systems. One returns gas for the La Gloria sand at approximately 3,200 lb. pressure, while the other returns gas for the other three zones at a pressure of approximately 2,825 lb. Lines of the two systems total approximately 6,800 ft. of 8-in. Grade B pipe



Above: Interior of compressor plant containing eleven 800-hp. gas engine compressors. Left: Inlet gas manifold to high-pressure absorbers (first three columns) showing inlet separator at right in foreground. Line at left is part of gas-return-line system.

and about 3,400 ft. of 6-in. Grade B pipe.

The development program calls for a total of 20 producing wells. For one of these, use is being made of the west edge well, one of the five wells drilled by Magnolia Petroleum Co. in the initial development of the field. This well, originally completed as a small oil well on gas lift, was reworked to fit into the program. The remaining producing wells are being drilled by the La Gloria Operators Committee. So far 17 of these have been completed.

Spacing of Producing Wells

Producing wells are being spaced at approximately equal distances on the periphery of a circle around the rim of the blocks, constituting roughly the outline of the condensate-producing area of the structure. The plant is located near the center of the circle. Like the input wells, each of the producing wells is a double completion to produce from two of the four sands. This makes La Gloria the first field in which all wells are dual completions.

The gathering system ultimately will contain more than 9,800 ft. of 8-in. main line with approximately 23,000 ft. of 6-in. secondary lines, and more than 32,000 ft. of 4-in. secondary and feeder lines. The main line extends northward and southward across the field from a juncture just west of the plant with the plant intake line. Connecting at different points on this main line are the 6-in. secondary or lateral lines serving various sections of the field. The latter in turn are fed by the 4-in. feeder lines from the individual wells.

Composition of the wet gas produced in the field as represented by samples of gas from the two deeper and main sands is shown in the following analyses:

Constituents—	Mols. per cent 6,500-6,600-ft. sand	Mols. per cent 6,100-6,200-ft. sand
Methane	91.10	91.25
Ethane	3.71	3.77
Propane	1.76	1.73
Isobutane	0.51	0.53
n-Butane	0.59	0.49
Pentane	0.49	0.45
Hexane	0.46	0.56
Heptane plus*	1.38	1.22
Total	100.00	100.0

*Heptane plus fraction has a molecular weight of 127, a vapor pressure at 100° F. of 1.3 lb. per sq. in., and 19.5 gal. is equivalent to 1 mol.

Normally, liquid products recovered in plant operation consist of isobutane, *n*-butane, 400-end-point, controlled-vapor-pressure gasoline, specification kerosene, and a gas oil-mineral seal product. When additional facilities now under construction are completed the plant is expected to recover 85 per cent of the butanes, both iso and normal. Operation of the plant is sufficiently flexible that variations of the above products and their specifications are readily obtainable.

Market outlet for products of the plant is provided through a 6-in. gasoline line which was laid by Magnolia Petroleum Co. to Magnolia Petroleum Co.'s terminal at Corpus Christi, a distance of approximately 90 miles. In addition, La Gloria Corporation has a small line to a railroad loading rack for separate disposal of butanes.

The plant is somewhat similar in general design to the gas-recycling and condensate-recovery plant at Cotton Valley, La., (The Oil and Gas Journal, July 10, 1941, p. 56), but differs from that plant in several respects and embodies a number of distinctive features.

Among these differences is the employment of steam as the motive power for prime movers, and, in this, practically 100 per cent use is made of turbines as the prime movers. Additional fractionating facilities, consisting of a final gasoline fractionator and kerosene sidestripper, have been provided. Also, gas throughput capacity is considerably greater than at Cotton Valley.

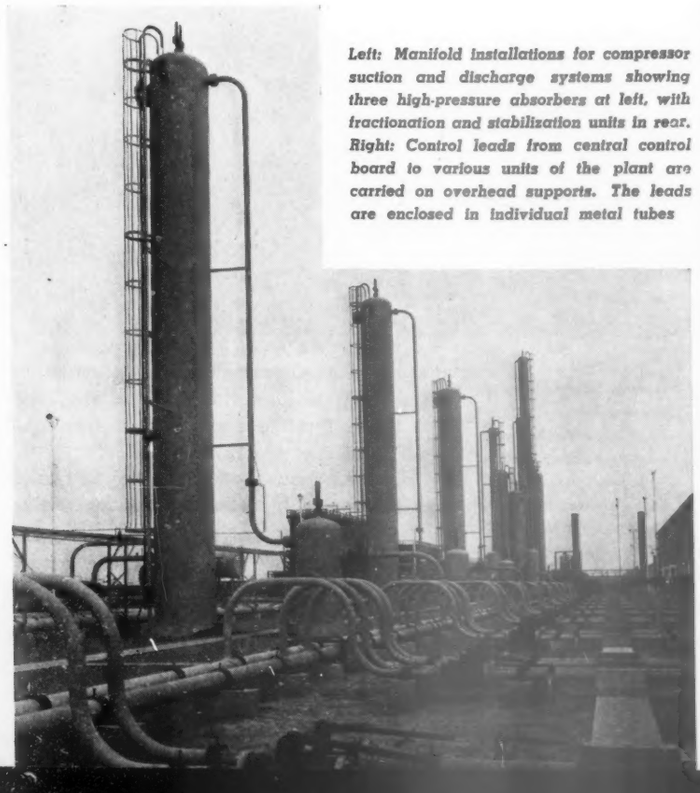
Atmospheric Sections

A special feature of the La Gloria plant lies in the fact that all cooling and condensing, except for the final end-fractionating unit, is by means of atmospheric sections installed in the coil shed in the base of the cooling towers. This is a factor in economical operation in that the product to be cooled and condensed can be brought to the cooling tower without pumping, while circulation of water to coolers and condensers would require pumping. Shell and tube condensers and coolers are provided for the final fractionating unit because of the heavier ends to be cooled and the distance from the unit to the cooling tower.

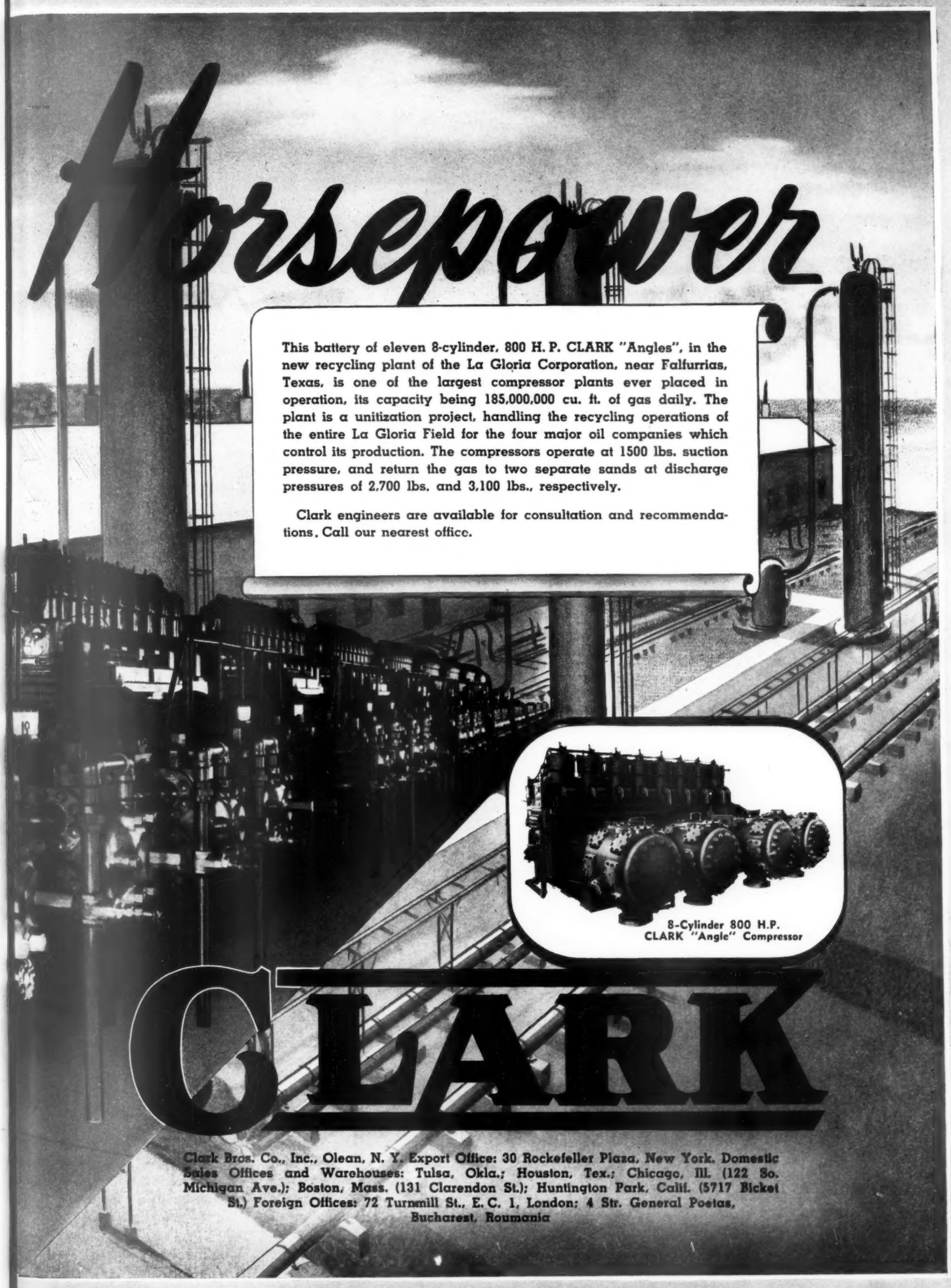
There are two cooling towers, one for product cooling and condensing, and the other for the gas-engine-jacket-water cooling and plant-exhaust-steam condensing. The jacket-water cooling coils are located in the base of the latter tower and through them the jacket water is circulated in a closed system. Steam-condenser sections, which are of the finned-tube type, are in the top of the tower. All exhaust steam from prime movers is passed through these condensers and returned to the boiler feed water supply. The jacket-water cooling tower is of the forced-draft type while the process cooling tower is of the induced-draft type.

High-pressure absorption is embraced as the medium of extracting the condensate from the gas. In this plant there are three

(Continued on Page 36)



Left: Manifold installations for compressor suction and discharge systems showing three high-pressure absorbers at left, with fractionation and stabilization units in rear. Right: Control leads from central control board to various units of the plant are carried on overhead supports. The leads are enclosed in individual metal tubes


Horsepower
This battery of eleven 8-cylinder, 800 H. P. CLARK "Angles", in the new recycling plant of the La Gloria Corporation, near Falfurrias, Texas, is one of the largest compressor plants ever placed in operation, its capacity being 185,000,000 cu. ft. of gas daily. The plant is a unitization project, handling the recycling operations of the entire La Gloria Field for the four major oil companies which control its production. The compressors operate at 1500 lbs. suction pressure, and return the gas to two separate sands at discharge pressures of 2,700 lbs. and 3,100 lbs., respectively.
Clark engineers are available for consultation and recommendations. Call our nearest office.
8-Cylinder 800 H.P.
CLARK "Angle" Compressor
CLARK
Clark Bros. Co., Inc., Olean, N. Y. Export Office: 30 Rockefeller Plaza, New York. Domestic Sales Offices and Warehouses: Tulsa, Okla.; Houston, Tex.; Chicago, Ill. (122 So. Michigan Ave.); Boston, Mass. (131 Clarendon St.); Huntington Park, Calif. (5717 Bickel St.) Foreign Offices: 72 Turnmill St., E. C. 1, London; 4 Str. General Poetas, Bucharest, Roumania

E. C. WILL
General Superintendent,
La Gloria Corp.

R. D. MORGAN
Plant Superintendent,
La Gloria Corp.

H. G. HOLMES
Chief Engineer,
La Gloria Corp.

HOMER C. GIVENS
Chief Operator,
La Gloria Corp.

R. E. HOUSER
Field Superintendent,
La Gloria Corp.

Congratulations to the

LA GLORIA CORPORATION

Unit No. 12, La Gloria Field

THE GREY WOLF DRILLING COMPANY
HOUSTON, TEXAS

W. D. (Bill) GRAY • R. J. (Roger) WOLFE • JOHN A. CHAPMAN

absorbers operating in parallel at a pressure of 1,500 lb. Each is 57 ft. high and 66 in. in diameter, and equipped with 24 bubble trays. Absorption oil circulated meets the following specifications:

Molecular weight	220
Vapor pressure at 100° F.	0.1 lb./sq. in. Abs.
Gravity at 60° F.	40° A.P.I.
Initial boiling point (min.)	500°-530° F.
End point	600°-650° F.

Wet gas from the field-gathering system is delivered at the plant boundary under pressure of approximately 2,000 lb., and at a temperature of 126° F. Diaphragm motor valves on the plant intake line control the pressure drop to the operating pressure of the absorption towers. There are two of these valves, one serving as an emergency shutoff valve.

Entering the plant, the wet gas passes through an inlet separator where an initial separation takes place to remove any condensate or water that might have formed in the lines. The liquid stream from the separator bypasses both absorbers and still, returning to the system as stabilizer feed, along with the condensed overhead vapors from the still, after a three-stage pressure reduction from 1,500 to 90 lb.

Two functions are performed by the initial separation in the inlet separator, namely:

1. The necessity for processing the extracted condensate through the absorbers and still is eliminated, thus lightening the load upon the absorbers and still, and saving in required capacity of these units.

2. The condensate extracted contains the heavier ends likely to contaminate the absorption oil; consequently, by not processing these ends contamination of the absorption oil is greatly reduced, and the operation of maintaining the desired characteristics of the absorption oil is greatly simplified.

Gas from the inlet separator is charged through a manifold header to the three high-pressure absorbers, where it is stripped of its condensate content, and passed overhead to the suction header of the compressors for return to the producing horizons in the reservoir pressure maintenance phase of the operations. Scrubbers, one for each absorber, and each 7 ft. high and 4 ft. in diameter, trap any liquid or spray that might

be carried over from the absorbers. They have liquid-level controls equipped with an electric alarm device which sounds in case one of the scrubbers fills with liquid.

The compressor plant contains eleven 800-hp. gas-engine compressors representing a total of 8,800 hp. These operate in parallel, taking suction from their common manifold header at absorption-tower pressure of 1,500 lb. The discharge manifold is so arranged that any or all the compressors can be discharged to either of the two input systems. However, with both input systems open, only the first three compressor units can be segregated for discharge to the La Gloria sand input system, leaving eight for the other system.

Maximum recovery of butanes from the condensate is attained through efficient reabsorption of light ends flashed in pressure-reduction steps, and retention in the processing system of all except the most volatile fractions. The installation includes both a high-pressure reabsorber having a working pressure of 380-400 lb., and a low-pressure reabsorber, having a working pressure of 90-100 lb.

The combined rich-oil streams from the bases of the three high-pressure absorbers are passed first to the primary flash tank. The ends vented in this pressure reduction pass from the flash tank to the high-pressure reabsorber where all except the most volatile undesired fractions which pass overhead as engine fuel gas are reabsorbed in contact with the lean-absorption-oil circulation and are returned to the rich-oil stream passing from the base of the tower to the secondary flash tank. Vapors from this flash tank are vented to the low-pressure reabsorber.

Again, through reabsorption in contact with lean absorption oil in this column, all except the most volatile fractions are retained in the system. The undesired fractions not reabsorbed pass overhead providing fuel supply for boilers and oil heaters.

In both cases, the residue gas from the high-pressure and low-pressure reabsorbers is passed through final scrubbers to remove any liquid that might be carried over.

Separate flash tanks are provided for the reduction of pressure of the liquid condensate stream from the inlet separator. Working pressures of these are coordinated with those of the high-pressure and low-pressure reabsorbers to permit passing flashed vapors from the primary or high-pressure flash tank to the high-pressure reabsorber, and, in turn, the flashed vapors of the secondary or low-pressure flash tank to the low-pressure reabsorber.

As previously stated, the liquid stream from the inlet separator passing through the high-pressure and low-pressure flash tanks is not returned to the main system except as stabilizer feed. Provision is made for the entire production of the field to be directed through this system if the absorbers are not operating.

The total rich oil from absorbers and reabsorbers is picked up by a turbine-driven centrifugal pump for circulation through heat exchangers to a vapor-oil separator, and thence through a direct-fired rich-oil heater, for final heating, to the still-rectifier. The direct-fired heater boosts the temperature of the stream to 550°-600° F. The still is 45 ft. high and 7-ft. in diameter, equipped with 10 bubble trays each in the stripping and fractionating sections, and is operated at a pressure of 80 to 85 lb. Some live steam is injected into the still to aid in the separation of the condensate fractions.

Bottom temperature of around 510° F. maintained in the still insures effective stripping of the absorbed condensate fractions, which pass overhead, and thence through condensers in the base of the process cooling tower, to the still reflux accumulator, and, in turn, to the stabilizer feed tank, along with the condensate stream from the inlet separator. Top temperature, controlled by circulation of reflux, is held around 350° F., retaining absorption oil fractions in the still. The hot lean absorption oil bottoms are returned to the circulation system.

Main units in stabilization and fractiona-

(Continued on Page 44)

Congratulations—
To La Gloria Corporation and the Hudson Engineering Corporation on the completion of the La Gloria Pressure Maintenance and Distillate Recovery Plant.
The Texas Pipe Bending Company furnished prefabricated piping for this plant.
TEXAS PIPE BENDING COMPANY
PIPE BENDS
PIPE COILS
WELDED HEADERS
Pipe Fabricators
HOUSTON TEXAS
OFFICE and PLANT
301 FRIO STREET
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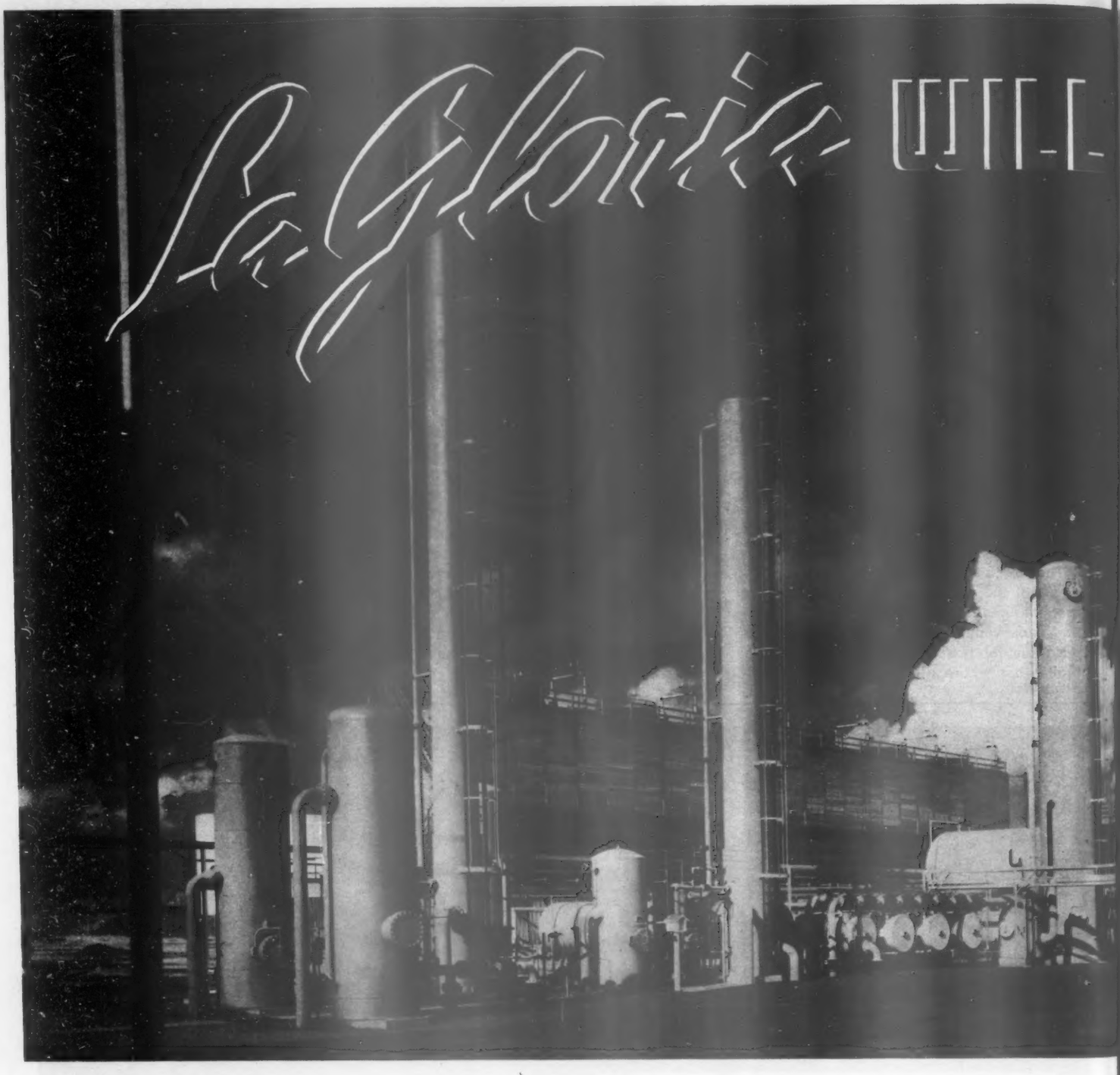
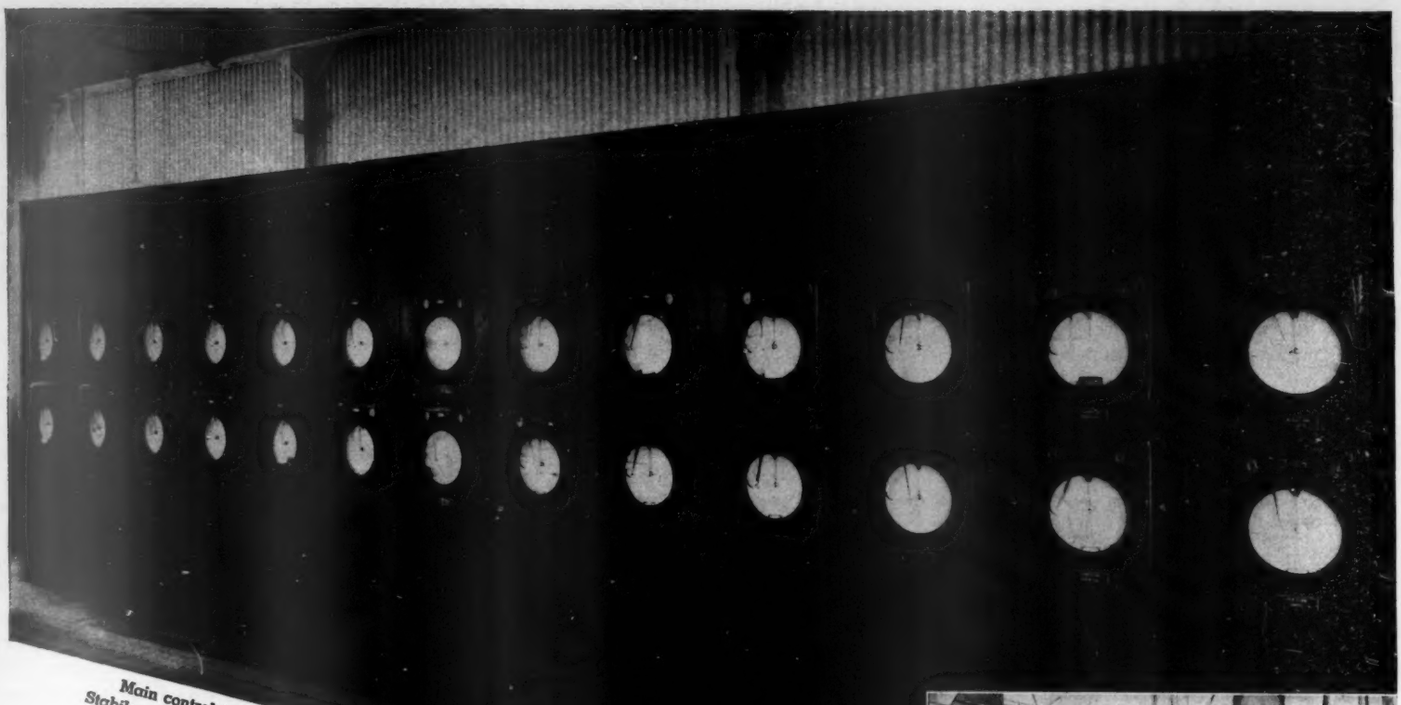


The La Gloria gas processing plant was completely designed, engineered, and constructed by Hudson Engineering Corporation. Hudson-built plants are now processing in excess of 800 billion cubic feet of gas per day.

HUDSON ENGINEERING CORPORATION

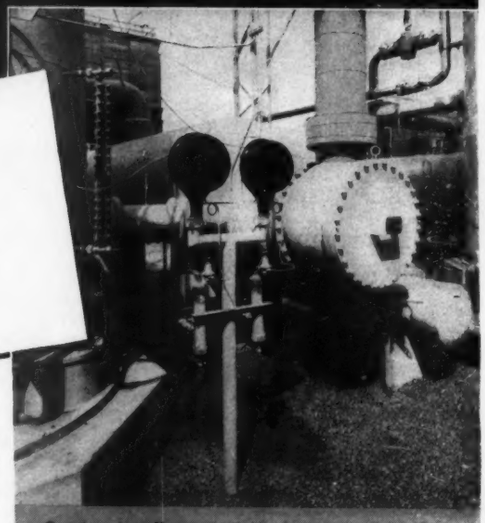
Engineers and Constructors

FAIRVIEW STATION, HOUSTON, TEXAS



Main control board at La Gloria plant, showing Stabilog Controllers for temperature, pressure and flow.

100% Foxboro Control at La Gloria!



Out-door installation of Foxboro Pneumatic Transmitters. The recording-controlling receivers are on main panel above.

A typical indication of the petroleum industry's confidence in Foxboro dependability is the new La Gloria Corporation plant . . . the world's largest condensate-recovery and pressure-maintenance installation! Here, too, 100% Foxboro Control was specified and installed!

As in the majority of other important petroleum plants, the complete instrumentation at La Gloria is built around the famous Stabilog Controller. Developed by Foxboro over 10 years ago, this *original* stabilizing instrument has proved its superior performance characteristics in more than 10,000 installations. Now again, it provides efficient coordinated control for an extensive system involving many other Foxboro Instruments as well.

Why not put your own control problems up to Foxboro? You'll get creative instrumentation that *works* . . . consistently, accurately and unfailingly . . . because it's based on practical knowledge of processes as well as instrument mechanisms. Write for Bulletin A252 describing the new Model 30 Stabilog Controller. **The Foxboro Company, 60 Neponset Avenue, Foxboro, Massachusetts, U. S. A.** Branch offices in principal cities of United States and Canada.

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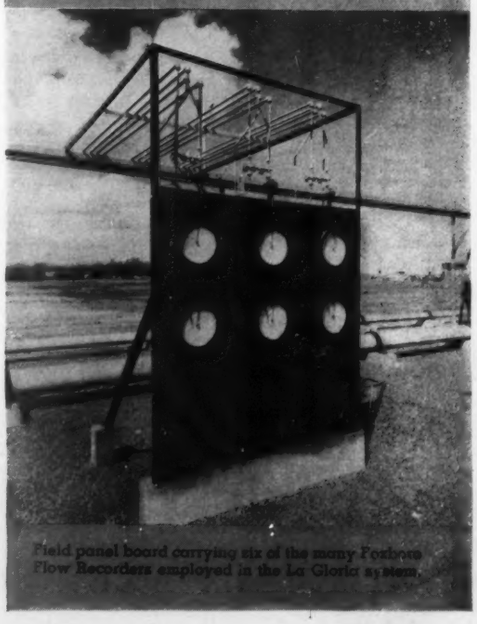


Field panel board carrying six of the many Foxboro Flow Recorders employed in the La Gloria system.

tion of the raw condensate include a depropanizer, a debutanizer, a deisobutanizer, and a final gasoline fractionator with a kerosene sidestripper. The depropanizer, a column 88 ft. high and 54 in. in diameter, having 36 steel trays spaced on 24-in. centers, is operated at a pressure of 260 lb. with temperature of 105° F. at the top and 145° F. at the twenty-eighth tray from the bottom which controls heat to reboiler. In this the raw condensate is stripped of all propanes down to less than a half of 1 per cent. If this were not done some of the propane would show up later in the deisobutanizer.

Propane and lighter fractions passing overhead to coolers in the base of the cooling tower are returned almost totally condensed to the depropanizer reflux accumulator, where any excess propane liquid not required for reflux is flashed overhead to the fuel-gas header. Bottoms, consisting of butanes and heavier fractions, after transfer of heat in exchangers to the depropanizer feed stream, are charged to the debutanizer.

In this column, operated at a pressure of 100 lb. with temperature at top of 142° F. and at bottom 340° F., a separation is made of the butane fractions, including both iso and normal butanes, from the pentanes and heavier fractions. The butane vapors passing overhead are condensed and returned to the debutanizer reflux accumulator, and thence to the deisobutanizer for separation of the iso and normal butanes.

The deisobutanizer, 127 ft. high and 5 ft. in diameter, is the tallest column in the installation. It is equipped with 70 steel trays spaced on 18-in. and 30-in. centers, and is operated at a pressure of 150 lb. Temperature has to be controlled within a narrow margin of 10° F. between top and bottom to effect efficient separation of the respective fractions. Top temperature is held at 170° F. with 180° F. on bottom.

Isobutane Vapors

Overhead, the isobutane vapors are condensed and returned to the deisobutanizer reflux accumulator from which a stream is circulated to the top of the deisobutanizer column as reflux. The remainder is pumped through additional cooling sections as pressure storage. Normal butanes drawn from the bottom of the column are cooled and run direct to storage.

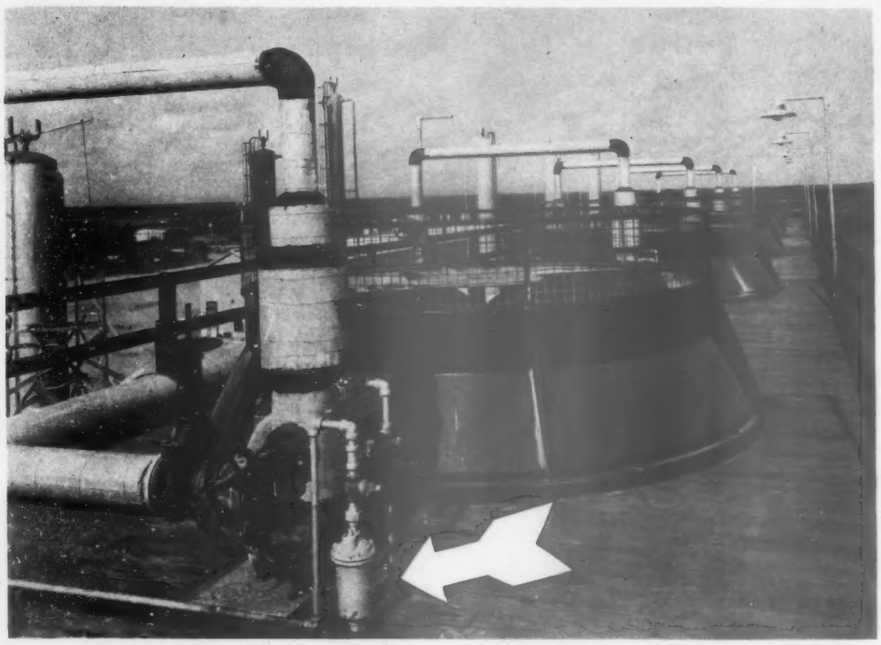
Pentanes and heavier ends drawn from the base of the debutanizer column are charged to the final gasoline fractionator. This is a tower 70 ft. high and 6 ft. in diameter, equipped with 30 trays, and operates around atmospheric pressure. Normally, temperature is held around 512° F. at the bottom and 255° F. at the top, although, by flexibility in temperature control, specifications of the various products can be greatly varied. Gasoline vapors are passed overhead through shell and tube condensers to the gasoline reflux accumulator as a finished motor-fuel product to be run to storage. The fractionator has a side-stream drawoff to a kerosene stripper, from which a kerosene cut is taken. The residuum consists of a gas oil-mineral seal oil product.

Hot lean absorption oil is utilized as the heating medium in the preheaters and reboilers of the stabilizing and fractionating units. The only exception is in the reboiler for the deisobutanizer column, in which exhaust steam is employed. The hot oil for the heating system is drawn from a 58-ft. by 30-ft. horizontal accumulator surge tank, which is tied in with the main absorption-oil circulating system by equalizing lines to the base of the rectifier still. This link provides equilibrium of oil temperature in the surge tank and base of the still around 510° F., as well as an adequate reserve supply of lean oil for the heating system.

From the surge tank, the hot oil is picked up by pumps and circulated through a direct fired oil heater, in which temperature of the steam is raised from 400° F. to 575° F., thence to the various preheaters and reboilers in the system, and back to the surge tank. The different temperature requirements of these units are taken care of by circulation of the oil to successive units according to their operating temperatures, and by provision for controlling the volume of hot oil to the units.

Lean oil for the absorption system is pumped directly from the still bottoms,

Armstrong Trapping for New La Gloria Recycling Plant



THIS interesting picture taken by Oil and Gas Journal's photographer shows the top deck on a battery of five cooling towers in the new La Gloria Recycling & Repressuring Plant. Note that the steam line to the drive on each cooling tower fan is drained by a No. 213 Armstrong Trap. Here, as at numerous other points in the La Gloria plant, there are very good reasons for using Armstrong Traps:

1. FREEDOM FROM TROUBLE. Only two moving parts. No narrow openings to get clogged up. Nothing that can collapse. Very little wear.

2. QUICK DRAINAGE. No lag in discharging condensate. Heating coils keep dry and up to maximum efficiency.

3. COMPLETELY AUTOMATIC. Nothing to adjust or set. No gage glasses to watch. No petcocks to open.

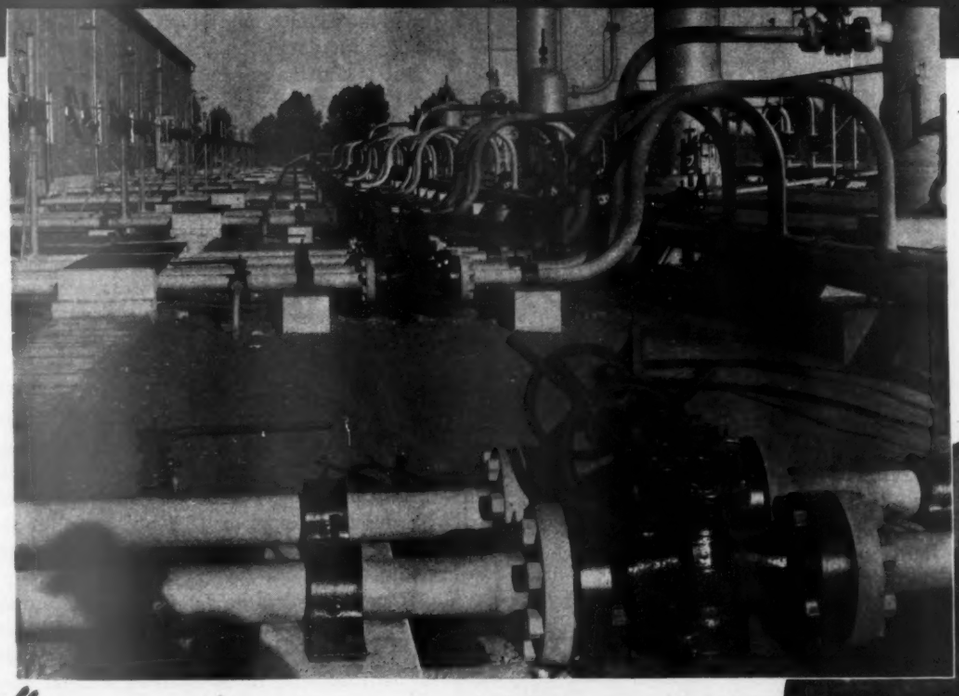
4. BIG CAPACITY. Your dollar buys less dead weight and more real capacity in an Armstrong Trap. Get our capacity chart.

5. WORLD WIDE SERVICE. You are never very far from an Armstrong Representative and a stock of Armstrong Traps. Ask for a copy of our catalog.

ARMSTRONG MACHINE WORKS
868 Maple St. • Three Rivers, Michigan

ARMSTRONG TRAPS
Automatic Drainage for
REFINERIES · GAS PIPE LINES · DRILLING RIGS

... another major NORDSTROM installation



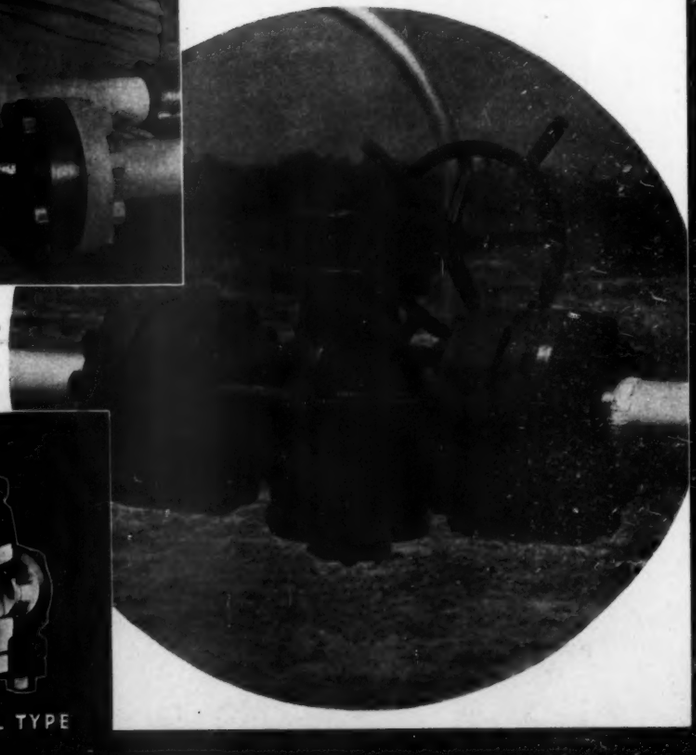
VALVES TESTED TO 10,000 LBS.

•

HYPRESEAL TYPE

•

NORDCO STEEL



"They had to be Nordstroms"

Another milestone in the progress of repressuring! La Gloria Corporation's new Condensate Recovery-Pressure Maintenance Plant at La Gloria, Texas, one of the largest ever built, handling 225,000,000 feet of gas daily, is completely equipped with Nordstrom Lubricated Valves. Scores of these Valves are of the high pressure Hypreseal Type, with working pressures up to 5,000 lbs. and tested to 10,000 lbs. It takes Nordstroms for service like this.

HYPRESEAL TYPE

MERCO NORDSTROM VALVE CO.

***A Subsidiary* of Pittsburgh Equitable Meter Co.**

Main Offices: Pittsburgh, Penna. • *Branches:* New York City, Buffalo, Philadelphia, Columbia, Memphis, Chicago, Des Moines, Kansas City, Tulsa, Houston, Los Angeles, Oakland, San Francisco, Seattle

through heat exchangers for transfer of heat to the incoming rich oil stream, and thence through cooling sections in the base of the cooling tower back to the tops of the various absorbers. The stream to the top of the low-pressure reabsorber is taken directly off the system without further pressure boost. The remainder of the cooled lean-oil stream is picked up by high-pressure pumps for discharge to the tops of the high-pressure reabsorber and the high-pressure absorbers. Like all processing pumps in the plant, these pumps are of the centrifugal type, driven by steam turbines. Taking suction at the circulatory-system pressure of 150 lb., the pump for the high-pressure reabsorber discharges at a pressure up to 500 lb. The pump for the three high-pressure absorbers, taking suction at the same pressure as the high-pressure reabsorber lean oil pump, discharges at 1,500 lb. pressure.

An absorption-oil conditioning unit, consisting of a small still and fractionator, serves to maintain the desired specifications of the oil and remove contamination. The stream to the unit is pumped directly from the still-rectifier bottoms and returned to the same point. Thus, as the lean oil is circulated both to the absorption oil system and to the heating oil system, a continuous stream also is kept in circulation from the same source through the conditioning unit.

Special Facilities Being Installed

Special facilities now being installed to increase recoveries of butanes (iso and normal) consist of gas coolers, through which the intake gas will be passed ahead of the inlet separator, and a primary fractionator to be placed ahead of the depropanizer. With the gas coolers, it is planned to lower the temperature of the intake gas from 126° F., the present inlet temperature, to around 100° F., which will permit more efficient and effective separation of the light fractions.

Steam for the plant is generated by three 617-hp. water-tube boilers. A fourth boiler of the same size is in process of installation.

Electric power needs are not great and are supplied by a 62.5 kva., 174-amp., 125-volt generator, driven by a steam turbine with a standby unit driven by a gas engine.

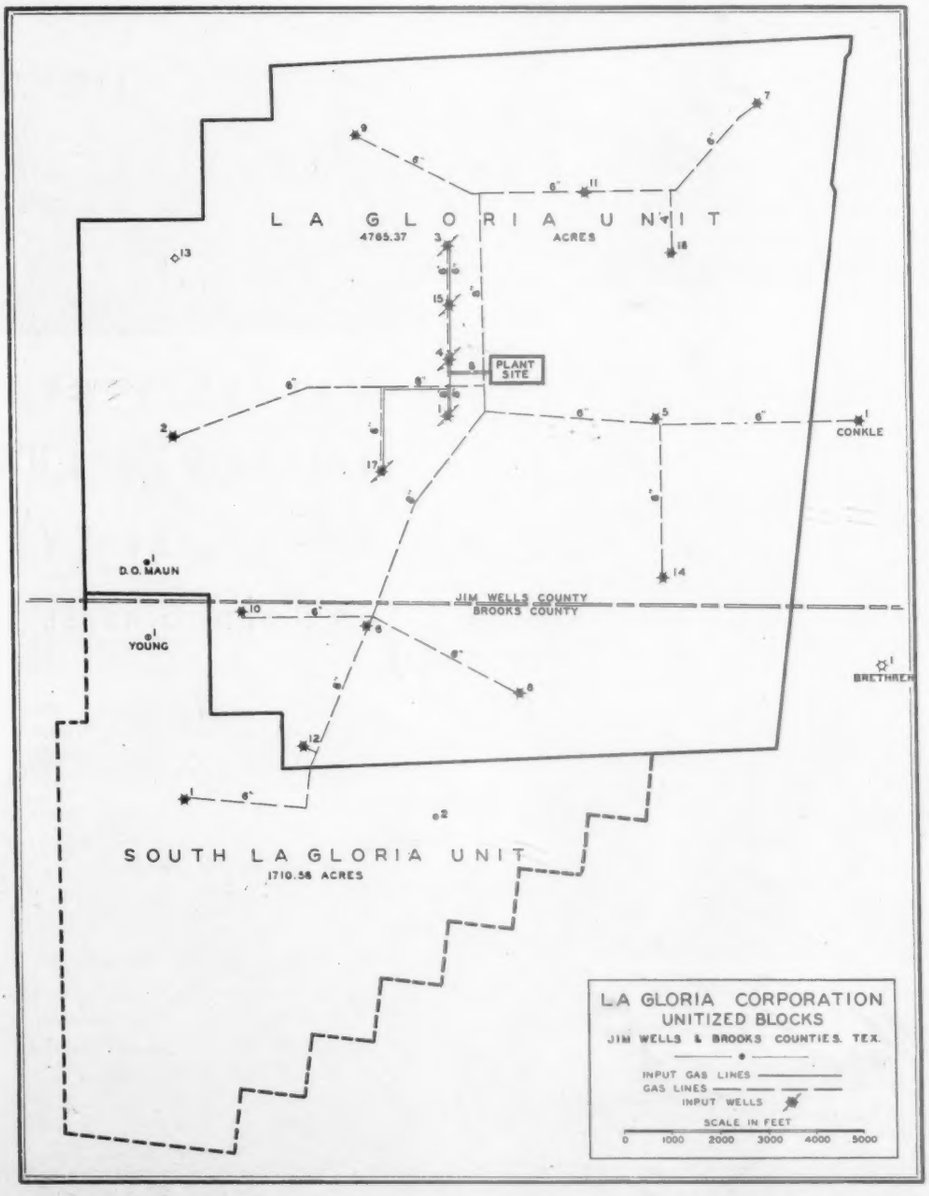
The plant is generously supplied with automatic-control devices. All control equipment is accessible from one central panel board in the pump building. Control leads, protected in small, individual tubes, are carried to the various parts of the plant on overhead supports where they are easily accessible. All effluent streams are equipped with metering devices.

Safety shutdown devices, operated by electrically controlled switches at several convenient points, are provided. The switches have automatic control for operation in case of a rupture without the operators' knowledge. In the event of emergencies, or when desired to shut down the plant quickly for other reasons, these devices operate to close the shutoff valve on the incoming high-pressure gas line, open the automatic relief valve in the line carrying gas from the plant to a remote point outside the plant, shut off the fuel to the engines and shut down the magnetos, shut off the fuel to the boilers and the oil heaters, and snuff fires. Dangerously high fluid levels or high pressures in any equipment are indicated quickly by various alarms, including sirens or horns, and lights.

All heat-exchange equipment is provided with bypasses for cleaning and replacements. All shell and tube equipment contains removable channels, removable bundles, and removable body covers. Floating head construction accommodates tube expansion.

Storage facilities consist of two 20,000-bbl. gasoline tanks; two 2,000-bbl. kerosene tanks; six 12-ft. by 40-ft. hemispherical head 40,600-gal. pressure tanks for butanes; one 1,200-gal. tank for lube oil; two 500-bbl. absorption oil tanks; a 2,000-bbl. tank for water, and an 8-ft. by 10-ft. open-top boiler feed water tank.

Operations of the La Gloria Corporation are under the supervision of E. C. Will, general superintendent. R. D. Morgan is plant superintendent; H. G. Holmes is chief engineer, and Homer C. Givens is chief operator. R. E. Houser is supervisor of wells and gas systems.



Plat of La Gloria field, on the Jim Wells-Brooks County line, South Texas, showing the two adjoining unitized blocks on which pressure-maintenance operations are being carried out, together with the location of the plant, gas-line system, and producing and input wells. The larger, or north block is the original block. The smaller is the south extension block

Equipment List in La Gloria Cycling And Pressure-Maintenance Plant

Plant designer and contractors—Hudson Engineering Co.

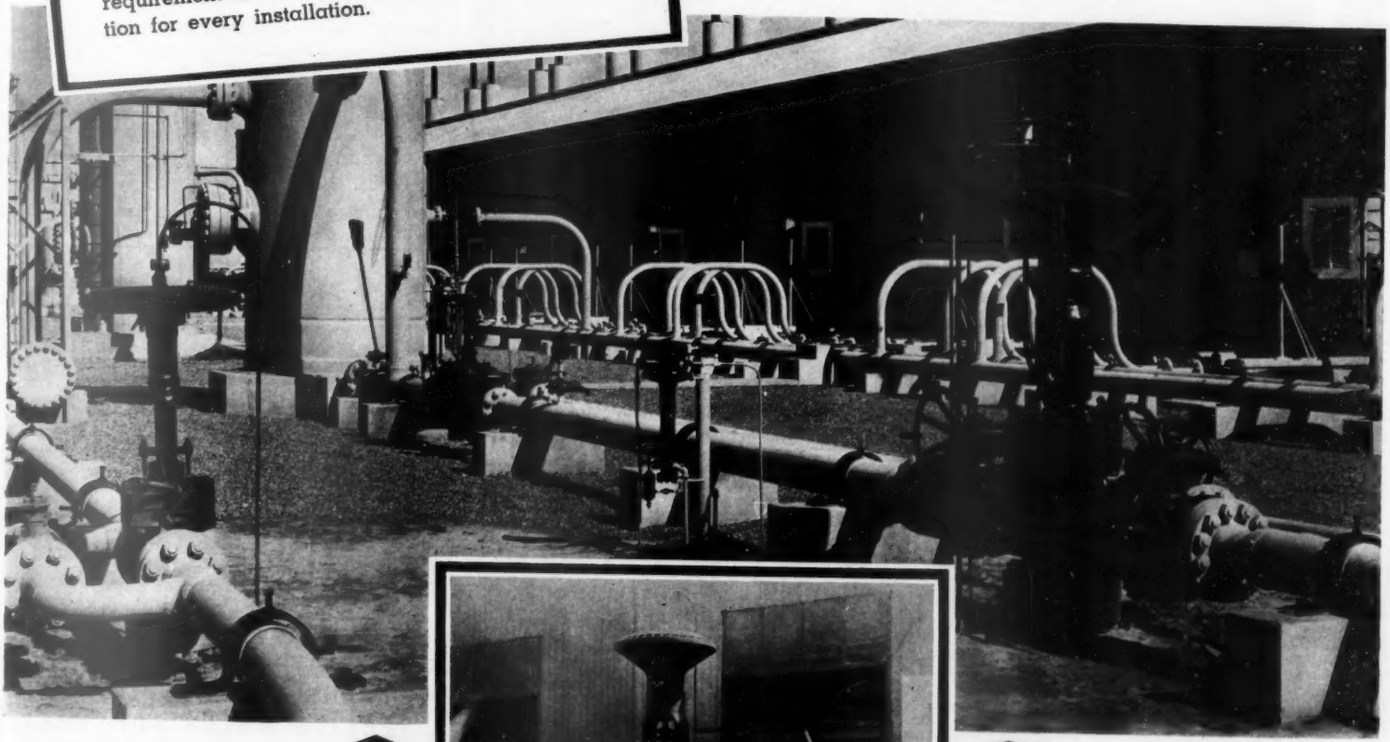
Inlet gas separator, absorbers, scrubbers, reabsorbers, high-pressure residue scrubber, still rectifier, vapor oil separator, reflux accumulators, lean-oil surge tank, depropanizer feed tank, depropanizer, deisobutanizer, debutanizer, final gasoline fractionator, vari-

FISHER CONTROLS AT LA GLORIA

LA GLORIA CORPORATION AND HUDSON ENGINEERING CORPORATION

. . . Specify FISHER AUTOMATIC CONTROLLERS exclusively for those all important control applications so vital to the operation and safety of this new pressure maintenance plant. Their choice is further evidence of Fisher leadership in the Automatic Control field — a leadership based on sound engineering; quality manufacturing; the completeness of the line; a policy of meeting industry's every requirement and a guarantee of satisfactory operation for every installation.

- ★ LEVEL-TROL LIQUID LEVEL CONTROLLERS
- ★ DIAPHRAGM MOTOR VALVES
- ★ FLOAT VALVES
- ★ WIZARD PILOT-OPERATED CONTROLLERS
- ★ FUEL GAS REGULATORS
- ★ BUTTERFLY CONTROL VALVES
- ★ DUO-GRAVITY DRAINERS
- ★ AIR TRAPS
- ★ PRESSURE BALANCED GAS REGULATORS



The valve immediately above is a Fisher Type 57-580 acting as the plant emergency exhaust valve. It is normally closed and is opened by a remote control switch system employing a solenoid valve.

The Fisher Type 57T Diaphragm Valve at the right is equipped with the "Giant" Type superstructure for heavy duty service. It is operated by a flow recorder and is handling hot oil to the high pressure absorbers at the rate of 825 G.P.M. and at a pressure of 1500 lbs. per square inch.

The "Giant" Fisher Type 57T Diaphragm Valve, seen in the foreground above, is the emergency shut-off valve in the main intake line. Normally open, it may be automatically closed by the Wizard Controller (center foreground) if the upstream main intake line pressure falls below the minimum plant requirement or fails entirely. It may also be closed by a solenoid valve actuated by any one of several switches located throughout the plant.

FISHER GOVERNOR COMPANY

• FISHER BUILDING •

MARSHALLTOWN, IOWA

ous reflux accumulators, high and low presure condensate vent tanks, fuel volume tanks, air tanks—A. O. Smith Corp.

Pure water surge tank and all storage tanks (except lube oil storage)—Chicago Bridge & Iron Co.

Gasoline-kerosene sidestripper and lube oil storage—Wyatt Metal & Boiler Works.

Gas engine compressors—Clark Brothers Co.

Two direct-fired tubular oil heaters—Alcorn Combustion Co.

Oil-heat exchangers, depropanizer heat exchangers, depropanizer reboiler, deisobutanizer reboiler, steam condensers at boilers, butane reboiler and butane preheaters—Struthers-Wells Co.

Gasoline reflux condenser, gasoline cooler, kerosene cooler, residuum cooler, feed heaters—J. B. Beaird Corp.

Cooling towers—Hudson Engineering Co.

Metal buildings, gutters and ventilators—Braden Steel Corp.

Processing and circulation pumps—Worthington Pump & Machinery Co. (Supplied through A. M. Lockett & Co.)

Boilers—Union Iron Works (supplied through M. N. Dannenbaum).

Refractory material and boiler outside brick work—Philbrico Jointless Firebrick Co.

Instruments—Foxboro Co.

Boiler steam header valves—Lunkenheimer Co.

Controls and valves—Fisher Governor Co.

Steam and water traps—Armstrong Machine Works.

Straight stem thermometers—Taylor Instrument Co.

Rupture disks—Black, Sivalls & Bryson.

Pressure gages—Crosby Steam Gauge & Valve Co.

Steam turbines—Pyle National Co., Coppus Engineering Co. and Moore Turbine Co.

Insulation—Standard Asbestos Manufacturing Co.

Flue gas, draft gages and manometers—Meriam Corp.

Piping, valves and fittings—Continental Supply Co.

Force-draft fans—American Machine & Metals, Inc.

Fire extinguishers—Dugas Engineering Co.

Fast couplings—Koppers Co.

High-pressure valves—Merco Nordstrom Co.

Gate valves—Walworth Co.

Pipe bends and saddles—Midwest Piping & Supply Co.

Prefabricated pipe bends—Texas Pipe Bending Co.

Welding ells—Taylor Forge & Pipe Works.

Tube turns—Tube-Turns, Inc.

Water well pumps—Fairbanks, Morse Co.

Oil bath filters—Vortox Manufacturing Co.

High-pressure gages—Penberthy Injector Co.

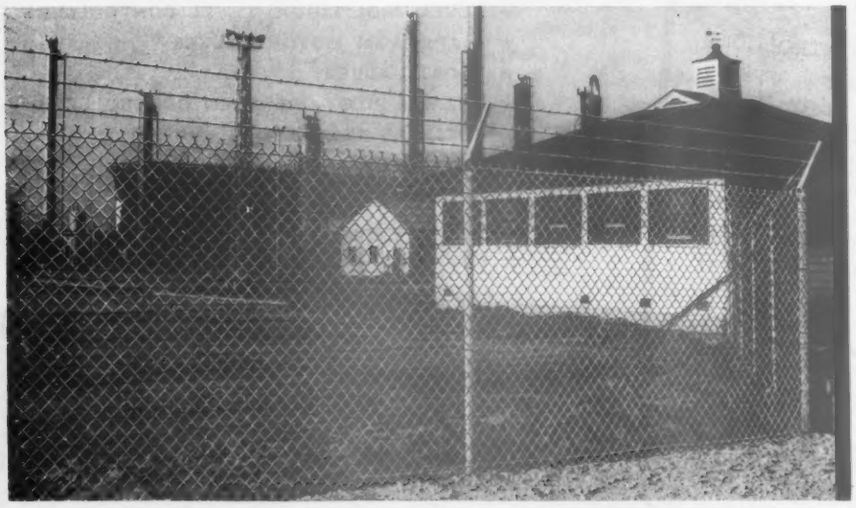
Electric generators—Westinghouse Electric & Manufacturing Co.

Generator drive gas engine—Waukesha Motor Co.

(Continued on Page 51)

PAGE FENCE

America's First Wire Fence — Since 1883

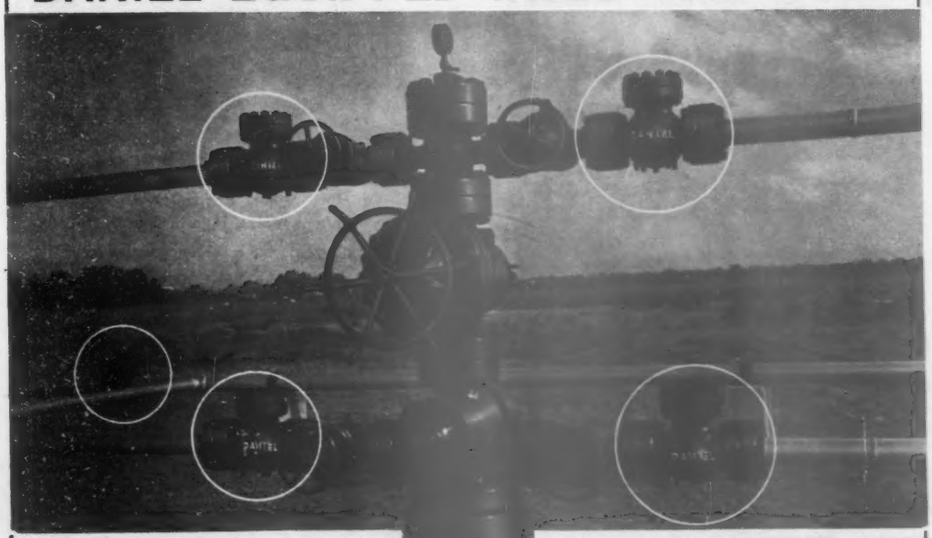


PAGE PROTECTS LA GLORIA

★ "America's First Wire Fence" salutes America's Largest Repressuring Plant! . . . and is proud to have been chosen as the protective enclosure for this new and vast project. Page has pioneered many important fence developments and has originated equally valuable consultation services. The Page Fence Association comprises 102 nationally-located members; each one maintaining a staff of trained fence specialists. As you can rely on Page's superior materials and manufacture, so you can have full confidence in this localized engineering and erecting service. Write for "Fence Facts" and name of nearest representative. Address PAGE FENCE ASSOCIATION, Monessen, Pa., or Bridgeport, Conn., New York, Pittsburgh, Atlanta, Chicago, Denver, San Francisco.

A PRODUCT OF PAGE STEEL & WIRE DIVISION—AMERICAN CHAIN & CABLE COMPANY, INC.

DANIEL EQUIPPED INJECTION WELL

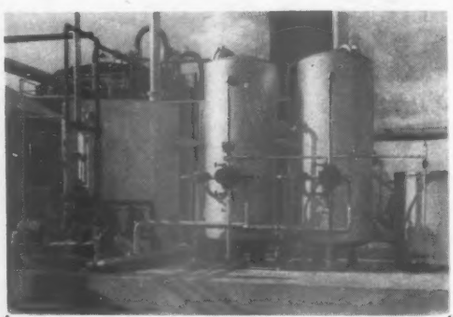


Specifications for this injection well included. 4. 3"-7,000 lb. test alloy steel DANIEL PISTON TYPE CHECK VALVES. Daniel H.P. orifice flanges with steel ring joint orifice plates and thermometer wells.

Another case of satisfactory service being rendered by DANIEL Positive shut-off, cushioned check valves. USE DANIEL CHECKS for your compressor discharge and injection well service.

DANIEL ORIFICE FITTING COMPANY

HOUSTON LOS ANGELES NEW YORK



La Gloria Corporation
Falfurias, Texas
Installs ELGIN DOUBLE CHECK ZEOLITE WATER SOFTENER

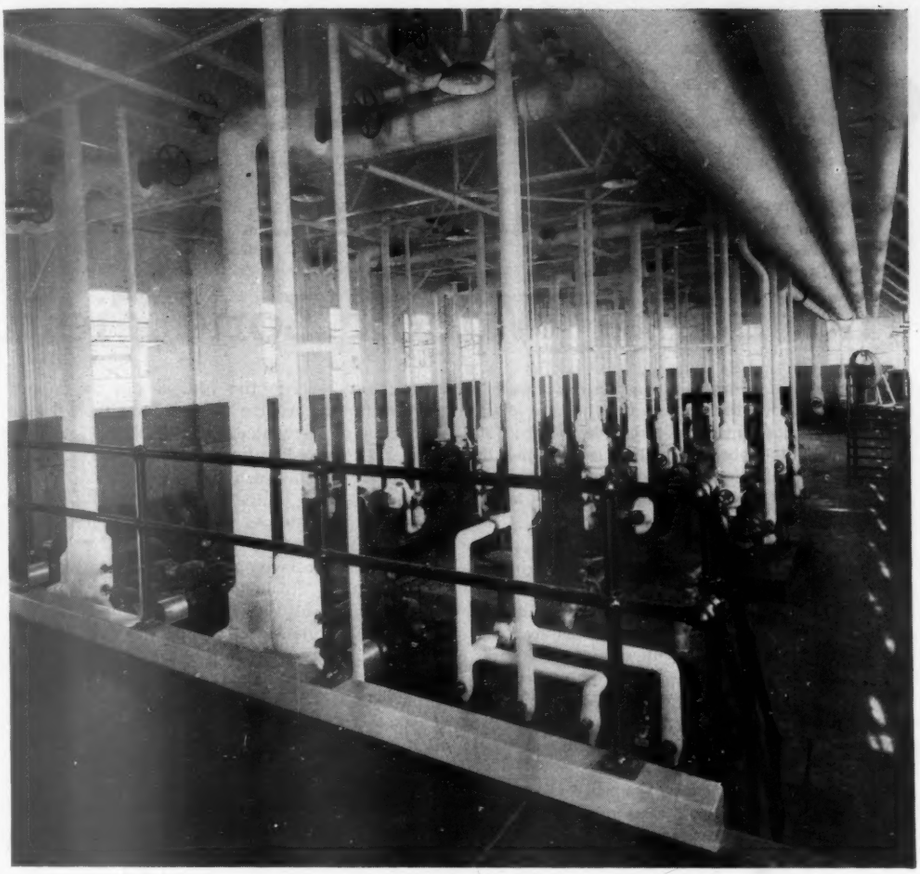
THIS plant, the world's largest of its kind, chose the Elgin Double Check Softener for these features:

- Delivers up to 35% more softened water
- Reduces salt cost as much as 25%
- Prevents loss of zeolite
- Permits faster, thorough backwashing
- Prevents packing and channeling
- Softener is self-cleaning

Consult Elgin On Your Water Conditioning Problems

ELGIN SOFTENER CORPORATION
ELGIN, ILLINOIS

F. B. HARWOOD, DISTRICT REPRESENTATIVE
1508 Craig Street Corpus Christi, Texas



Interior of processing pump house. All pumps are steam-turbine driven

Electrical conduits and miscellaneous electrical equipment—Crouse-Hinds Co.

Regulators on main gas intake line—Fisher Governor Co.

Liquid meters for measuring gasoline—Smith Meter Co.

Burners in boilers and furnaces—Forney Combustion Engineering Co.

Blowers—Green Fuel Economizer Co.

Water softener—Elgin Softener Corp.

Lubricators on engines—McCord Radiator & Manufacturing Co.

Gas-analysis instrument in laboratory — Walter J. Podbielniak.

Fence—Page Fence Co.

Bendix magneto on gas engines—Scintilla Magneto Division, Bendix Aviation Corp.

Input and supply well heads—Cameron Iron Works.

Valves on input wells—W-K-M Co.

Check valves on input wells—Daniel Orifice Fitting Co.

Overhead hoist in compressor building—Wright Mfg. Div., American Chain and Cable Co., Inc.

Drilling contractors—The Grey-Wolf Drilling Co.

Eight turbines—Coppus Engineering Co.

Regulators on incoming gas from well to plant—Grive Regulator Co.

●

"Marsh Buggy" Important in Louisiana Development

MARSH buggies are now standard equipment for most contractors in the low lands of Louisiana. They have been in use for a few years in the coastal areas of Louisiana but now their efficiency is being demonstrated in the spreading Wilcox zone play of Central Louisiana. It was predicted several months ago that if development and extensions continued, drilling would soon be carried over the many lakes and bayous of Central Louisiana. A short time ago one large company staked locations for two tests to be drilled over Catahoula Lake in Central Louisiana. Plans submitted show derricks, engine houses, and pipe-rack platforms on pile foundations 60 ft. in length, driven to a depth of 37 to 38 ft. below the bed of the lake.

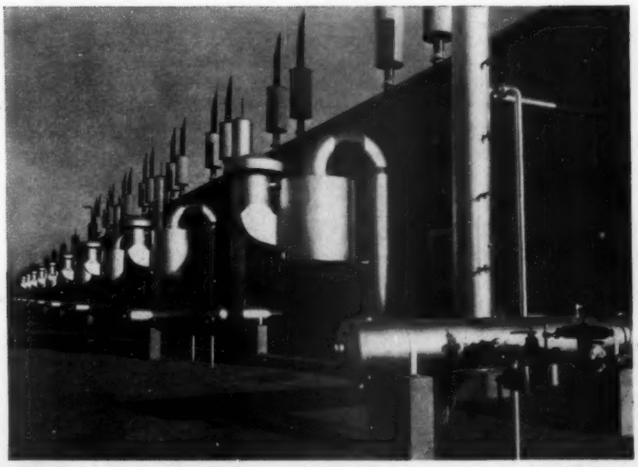
Preliminary exploration of a geophysical nature and even the subsequent drilling activity on tests of this type, require the use of the marsh buggy for transportation to and from the site. The buggy was developed to meet the difficult terrain conditions of the soggy coastal country by Gulf Refining Co. engineers in the Harmarville, Pa., research laboratory, after exploration crews asked for a vehicle that could take water, land, and marsh in its stride.

Huge, Low-Pressure Tires

Combining features of the automobile, truck, and tractor, the buggy is powered by an 85-hp. motor mounted on a large automobile chassis. The wheels are propelled by a combination truck-and-tractor transmission with gear ratios as high as 300 to 1, and with a double-speed reverse. The vehicle is equipped with gigantic tires which carry only 4 lb. pressure.

As exploration and actual drilling continue to spread throughout the swamp country of La Salle, Catahoula, Rapides, and Avoyelles parishes, these marsh buggies will be employed more and more as means of transportation. Contrary to some belief, the operating companies do not, for the most part, own and operate the machines. The contractors for the drilling and the independent exploration companies use them, since it is their work that is primary in the opening of new areas to oil activity.

LA GLORIA CORPORATION PICKS *Vortox* FOR AN IMPORTANT AIR CLEANING JOB!



FULL DUST PROTECTION for vital engine parts is provided by Vortox Air Cleaners installed on the engines at La Gloria Corporation's huge condensate recovery and pressure maintenance plant at La Gloria, Texas.

Throughout major oil and gas producing territories, you'll find Vortox Cleaners the overwhelming choice of operators. These Cleaners not only incorporate special design features which make them highly efficient for all types of air cleaning jobs . . . but have construction features which insure years of trouble-free service and low maintenance cost as well. They're made in sizes and types for gas, gasoline and Diesel engines whether used on trucks, tractors, or as stationary pumping and compressor units.

Vortox Air Cleaners combine in one compact unit the three most effective air cleaning actions known: (1) Centrifugal action, (2) Cyclonic oil spray, and (3) Oil washed filter elements!

VORTOX MANUFACTURING COMPANY, CLAREMONT, CALIFORNIA

Difficulties of Completion

. . . offer challenge in Central Louisiana Wilcox Zone Field

By W. R. S. JONES and R. MARNE SANFORD

This material covering the difficulties encountered in cementing and completing wells in the Olla field of the Wilcox zone in Central Louisiana was first presented in discussion forum before the Ark-La-Tex chapter of the A.P.I. in Shreveport, La., in October 1941 and was prepared and written for publication jointly by W. R. S. Jones, district engineer, Arkansas Fuel Oil Co., Olla field, and R. Marne Sanford, district editor, The Oil and Gas Journal, Shreveport, La.

CEMENTING and completion problems in the Olla field (and other similar Wilcox zone fields of Central Louisiana) are as difficult as any encountered in the development of a major oil field. It has been recognized that the completion of the wells in the Olla field is a highly important factor in the nature and life of the well itself.

This article will discuss mainly problems encountered and methods of solution employed in the Olla field, La Salle Parish, other Wilcox fields of the district including South Olla, Little Creek, Nebo, and others, have similar conditions and may have similar problems. Although the depths vary in these fields, the formations penetrated and the producing zones encountered are the same.

The greatest difficulty is due to the fact that the well walls consist of very soft, "rotten" shales and argillaceous, unconsolidated sands. This condition makes it almost impossible to obtain a firm bond between the cement and the wall of the hole. A definite cause for subsurface failure is hard to establish absolutely, but it is generally accepted that this lack of bond causes more poor cementing jobs in the area than any other defect.

Employ Casing Centralizers

There is an unusually fine natural mud in the area and very little artificial agents have to be added to the drilling fluid, with the possible exception of about 8 gal. of viscosity reducer per well to keep the viscosity down. The mud is maintained at about 28 to 30 seconds viscosity A.P.I., and about 10.2 lb. per gal. After reaming down in preparation to running casing, only about 7 or 8 hours time is lost before landing and cementing the string.

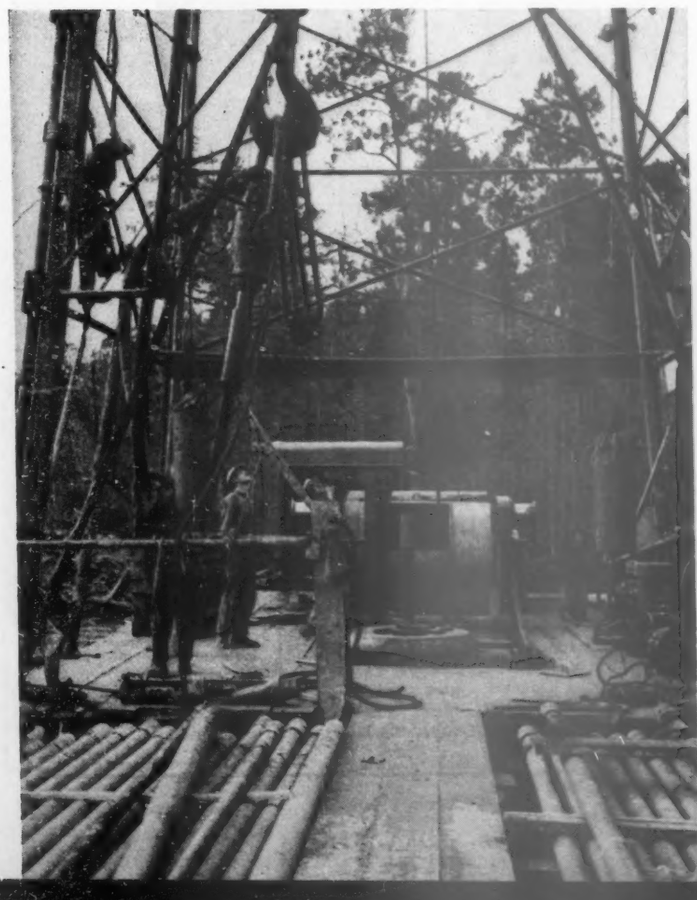
Casing centralizers are always spaced above and below the producing sand, thus eliminating the chance of the pipe lying against the side of the hole. The casing program in the Olla field is as follows: A 200-ft. conductor string of 10¾-in. is set and cemented with 125 sacks of cement. The 7-in. o.d. oil string is set through the pay zone to a depth of 2,200 to 2,400 ft. with 350 to 400 sacks of cement being used. In all casing and squeeze jobs, quick-setting cement is employed exclusively. Having run the 7-in. casing the mud is circulated and the pipe worked for almost 1 hour before being cemented. The first 100 sacks of cement are mixed in very thin slurry (12 lb. per gal.) and used to wash the sand face, while the remaining slurry is thickened up to 15 lb. per gal. The cement is allowed to set for 48 hours.

In the Olla field there are no less than five to six sands (all of which are potential producers) within 200 ft. This multipay condition often results in gas, salt water, or both, being found either above of below the pay. If gas and/or water are encountered, squeezing at the top of the pay and a squeeze job at the base of the pay are employed. This guards against possible migration of gas or salt water up or down the pipe to the oil sand. It also helps create an artificial break at the oil-water or gas-oil contact point.

Braden-Head Squeeze Jobs

On these squeeze jobs, the braden-head method is used (one set of perforations at a time), but on various occasions a squeeze tool has been used when pressure greater than 2,000 lb. was desired. Breakdown pressures on these formations vary from zero to 1,400-lb. surface pressure. The desired maximum pressure is about 1,600 to 2,000 lb. but the final pressure is not indicative of the

Getting ready to use kelly for squeeze cementing through tubing on a well in the Olla, Louisiana, field



Tubing supported by elevators while cement is being pumped into the well and forced into the formation

success of the cement job. Five or six squeeze jobs have necessarily been applied at times to successfully complete a well; in some cases only one job has proven sufficient.

Salt water mixed with the cement has been tried in several instances, but with comparatively poor results. The slurry tended to fluff up considerably and when set closely resembled a porous sponge. The theory or practicability of the procedure has not been totally abandoned. One service company in the field is at present experimenting with this idea and hopes to arrive at some definite conclusion soon. It is thought there might be a solution of brine with just the proper amount of salt to produce a good slurry.

Experiment With Salt Water

Segments of cores have been placed in solutions of salt water of varying salinity with various results noted. The fresh water tended to attack the body of the core and disseminate it, while those cores in the salt water were found to keep their shape and firmness. This work is still in the development stage.

Several well-bore caliper jobs have been run in wells in the field and no cavities have been found. The hole was always found to be remarkably true to a bore, a 9⅞-in. bit cutting an average 10-in. hole almost uniformly. This stands out in contrast to those fields where wells show large cavities washed out in the shale sections while the sand sections stand fairly true to bore. Wall scrapers have been used in the Olla field only on several occasions.

One company in the field has begun using 9-in. bits instead of the usual 9⅞-in. They find this gives somewhat better results, especially on squeeze jobs. No difficulty has been experienced in running 7-in. casing in the smaller hole.

Several intricate cement jobs have been performed in the field in the more or less experimental attempts to discover the answer to the problem of shutting off the salt water. The main methods tried are as follows, any one of which might soon become the conventional procedure.

1. The well was drilled to the desired total depth of 2,480 ft. and an electrical survey was made of the hole. A well caliper was run to the bottom to determine the size of the well bore and it was found to be almost true to bore all the way down. The 7-in. casing was run to bottom and 10 bbl. of water (with 100 lb. of detergent chemical) was run ahead of the cement to wash the face of the sand.

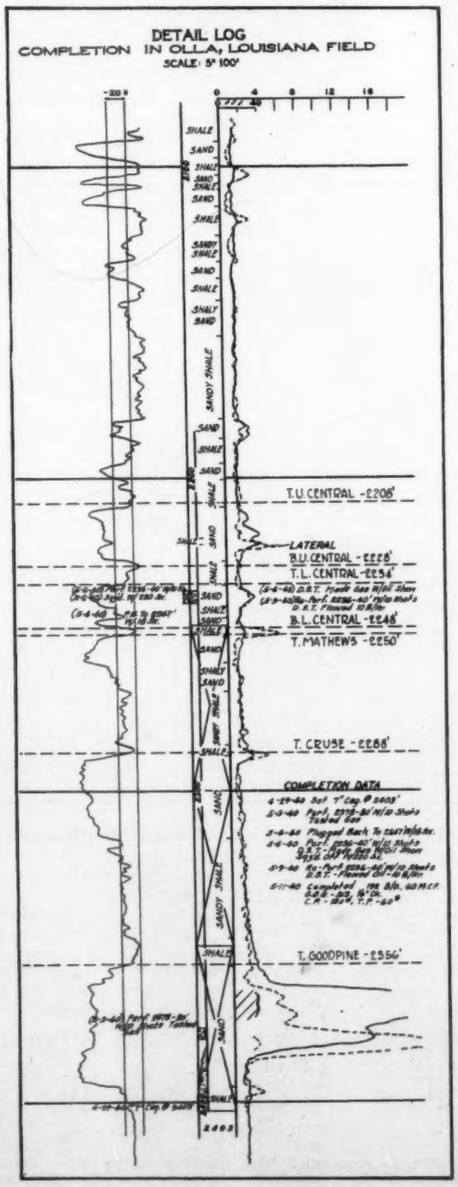
Enough quick-set cement (with 3 per cent bentonite) was pumped down the casing to fill the annulus above the saturated-sand section to about 1,500 ft. This was followed by 50 sacks of quick-setting gypsum cement in a 15.5-lb. per gal, slurry to raise the cement behind the casing to 800 or 600 ft. below the surface. Immediately behind the gypsum cement were 350 sacks of slow-set cement. The gypsum cement was spotted around the casing shoe and allowed to take its initial set, after which the slurry from the 350 sacks of slow-setting cement was forced into the formation in an attempted squeeze. This might be described as a continuous cementing process using three varieties of cement with the way being prepared for a squeeze job (without any tool) in the final stage.

Use Shoe With Nine Holes

2. On several wells the casing has been cemented through stage collar and shoe combinations. Two different companies handle this setup in the field. The stage collar is set above the sand. Slurry from 100 sacks of cement is pumped out of the shoe and then the ports are opened so that the remaining cement may be forced out into the annulus. At various times the cement has been placed through the tubing, using a squeeze tool at the bottom. The casing is landed and the hole washed, then the tubing and squeeze tool are run almost to bottom. The procedure is to run out 100 sacks of cement and clear of the nose of the shoe. The first batch of cement is allowed to set for 3 hours and the rest of the cement is squeezed out of the end of the shoe, trying to build up a squeeze pressure at the same time.

3. Experiments have been made with an especially made shoe, designed by a company specializing in oil string shoes. Very favorable results have been obtained and it is being used widely in the field. Openings around the periphery of the new type shoe remain closed until the casing is run to the desired depth and the operator wishes to open them. Thus, should a bridge be encountered while going down the hole, it can be washed away easily because the entire flow of fluid is directed out through the nose of the shoe at high velocity. This also makes possible the removal of cavings and cuttings which may have settled to the bottom of the hole.

After casing has been run to the desired depth, a diverter ball is dropped in the casing from the ground surface and this sinks or is pumped down to the seat in the bottom of the shoe, thus closing the axial hole. The application of pump pressure on the fluid column in the casing and the shoe causes a plastic diaphragm in the shoe to rupture, opening a cylindrical chamber entirely around the inside of the shoe from which opens a series of nine ¾-in. lateral discharge ports. Cement discharged directly against the formation has a scouring effect and results in a better bond which assures a satisfactory cement job.



Detail log and completion data on well in Olla field

The entire volume of cement slurry is ejected out of the side ports spaced equally around the bottom of the shoe. The cement rises as an unbroken column around the pipe and minimizes the chances of "channeling." Contamination of the cement is minimized. The pipe can be worked up and down (either a maximum of some 40 to 45 ft. or a minimum of 8 to 10 ft.) while cement is being placed and through the surging effect completely displace the contaminating fluid sometimes left in the numerous pockets and crevices.

4. In one instance it was believed that the scouring effect of the cement slurry had a tearing-down effect on the walls of the hole. It was decided to cement with 100 sacks and run a temperature bomb to determine the height that the cement had risen behind the casing. The casing was gun-perforated just above the point where the cement was located and more cement was squeezed in above the sand. This method has been abandoned as the sealed-up perforations frequently gave away during subsequent squeeze jobs.

Radioactive Tracers in Cement

Carnotite has been used by one company to discover what is happening to the cement which is used on the squeeze jobs. Carnotite is a mineral containing uranium which is radioactive and responds to a gamma ray survey by showing a definite "kick" on the log. On one particular well Carnotite was used as follows: Casing was set in the conventional manner about 90 ft. below the producing horizon and after cementing, a temperature-bomb survey showed the cement to be well up in the hole. An initial attempt at production was made by gun-perforating a 3-ft. section but salt water resulted. Then the second squeeze job employed 100 lb. of Carnotite mixed with 100 sacks of cement and forced into these perforations. A final pressure of 2,000 lb. was attained. Having waited on cement for 36 hours, a gamma ray survey was run to determine the location of the cement. It was found that contaminated cement had gone up the annulus at least 100 ft. and also down below the shoe some distance. It was decided that the slurry had traveled up and down the side of the hole between the original cement job and the wall, where it had been impossible to obtain a sufficient bond to pack off this small area.

Although a comparatively new product in the field, Carnotite offers a great promise of proving a valuable aid in the experimenting and developing of oil-well cementing, as by its employment one can trace the course of the cement slurries.

Fasing the fact that operators in the district are confronted with a most difficult task in the cementing of the Olla field wells, ways and means are being tried on every well to arrive at a solution to the problem.

Great appreciation is expressed to the following for their valuable and willing assistance in the preparation of this article: E. A. Croft, drilling superintendent, Arkansas Fuel Oil Co.; J. F. Justiss and T. M. Rabb, drilling superintendents for H. L. Hunt and Placid Oil Co. properties, Olla field.

QUESTIONS ON TECHNOLOGY

By W. L. NELSON, TECHNICAL EDITOR

Comparison of Gasoline Manufacturing Processes

What are the processes that are now used for making gasoline? Will you compare them as to points of conformity and difference particularly with regards to the Dubbs and the Hydroforming processes?—H. F. W.

The question is such a broad one that only a most general comparison can be made. The bulk of gasoline stocks are still produced by the distillation (or topping) of crude oil and from natural gas by the absorption process. The gasoline by these operations has, however, a low octane number, and hence high-octane-number gasoline must be produced by other processes to compensate for the inferior properties of the straightrun products. Minor quantities of high-octane-number blending stocks (gasoline) are produced from cracked gases and such hydrocarbons as propene, propane, the butanes, and the butenes. These are handled by such processes as polymerization and alkylation which were described along with other processes in the May 9, 1940, issue of this page. A similar discussion of cracking appeared in the November 14, 1940, issue.

The only important processes for producing large amounts of high-octane gasoline are thermal cracking, catalytic cracking (Houdry), alkylation, and hydroforming. Hydrogenation attracted much attention in years past but the gasoline produced by this process has a low octane number. Although many mixed-phase cracking processes have been patented, all of these now operate in essentially the same way and differ from one another only in the mechanical equipment that is employed or in the facilities that various licensors may offer to the purchaser. A comparison of the three main processes is given in the form of a tabulation.

It must be borne in mind that exceptions can be found to the average figures given in the tabulation, that the possibilities of the catalytic processes have not as yet been fully developed or explored, and that the feed stocks for the catalytic processes have thus far been greatly restricted. The value of octane number and lead susceptibility cannot be overlooked. At low ranges of octane number the cost of producing an increase in octane number is small whereas at high ranges of octane number (80-100) the cost is far larger and in fact can scarcely be attained without the use of special processes.

Condition of Water For Cooling Towers

We are under the impression that there is an optimum pH range for water handled in redwood cooling towers that would keep deterioration of the wood at a minimum. Would you please give us any information that you have on the subject?—L. G. R.

The deterioration of redwood in cooling towers appears to be less related to degree of alkalinity or acidity (pH values) than to accumulations of chemicals or salts in the cooling water. The few isolated instances of deterioration of redwood in cooling towers are usually traceable to the methods of water treatment that are used. These treatments tend to build up the alkalinity in the water through concentration of chemicals to a point where they cause delignification of the wood. Parts of the tower that are continually washed down with water are little affected even under excessive alkalinity. Those parts, however, upon which water splashes (as on aerators) are most affected because the water is constantly evaporating from them and the concentration of chemical in the wood constantly increases.

The presence of sodium carbonate has been noted by B. F. Wade (associated with California Redwood Association) in connection with redwood deterioration. Sodium carbonate (with lime) is probably the most widely used chemical for water treatment and hence the above situation should be a common one. Possibly some of the other water treating agents such as hexametaphosphate (Threshold treatment) might be employed—or more care could be taken to not overdo the treatment of the water with respect to the amount of sodium carbonate used. Except in the control of algae growths, it would appear that no occasion would arise in which the water would be acid in its reaction.

On the above discussion as a basis, the difficulty resolves itself into an economic balance between the loss involved in the corrosion of boilers, lines, etc., if the water is not slightly alkaline, and the loss involved in the deterioration of cooling tower lumber except that other methods of treatment, such as sodium hexametaphosphate, which do not involve the use of sodium carbonate, may be useful. Cedar or cypress is affected in somewhat the same way, being attacked mildly by alkaline waters and affected little by neutral water or even slightly acid water. The pH value of 8 to 9.5 recommended by some engineers to avoid corrosion of steel may be higher than necessary and may damage the wood.

Tetraethyl Lead Fluid Has High Flash Point

I am interested to know if ethyl fluid is inflammable and what is its flash point?—S. B. N.

Ethyl fluid and the constituents which compose it are not highly inflammable materials. Ethylene dichloride has the lowest flash point but it is used in very small amounts and apparently does not contribute greatly in lowering the flash point. The flash points of the constituents and the fluid, according to the Ethyl Gasoline Corp., follow:

	Flash point	Boiling point
Ethylene dichloride	69° F.	183° F.
Kerosene	115° F. (min.)	350°-550° F.
Tetraethyl lead	140° F.	392° F.
Ethylene dibromide	None	270° F.
Ethyl fluids	Over 250° F.	

Ethyl fluid begins to emit fumes at 250° F. and should never be openly exposed at even lower temperatures.

The above indicates that lead fluid is not an inflammable material but does not infer that care should not be taken. Fires in the vicinity of stored ethyl fluid are dangerous because the fluid may be exposed or will emit fumes that are dangerous. For this reason every precaution should be taken to protect storage.

If ethyl fluid does become exposed it can be destroyed by the application of dry sodium sulfite or wet bleaching powder, or if these are not available, the fluid may be diluted with large volumes of kerosene and burned in a secluded area. If the spilled fluid is burned, care should be taken to avoid the fumes that are produced.

COMPARISON OF LARGE-SCALE GASOLINE PROCESSES

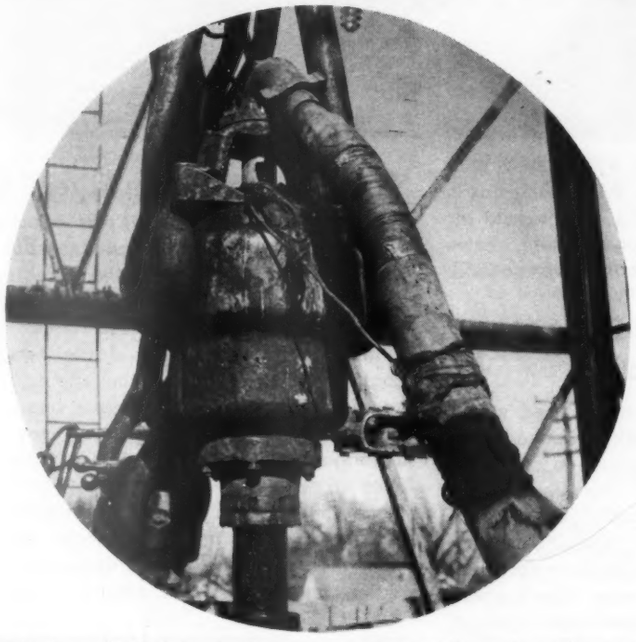
	Thermal decomposition			Catalytic processes	
	Cracking				
Factors:	Mixed phase	Vapor phase	Reforming	Hydroforming*	Houdry
1. Main feed to reaction	any oil	gas oil	naphtha	any naphthas	low-carbon distillates and naphtha
2. Primary chemical reactions	decomposition polymerization	decomposition polymerization	decomposition polymerization	decomposition isomerization(?) hydrogenation of olefins(?)	decomposition isomerization(?)
3. Catalyst	none	none	none	yes	yes
4. Catalyst cycle time	.....	.....	.....	relatively long	short
5. Temperature, °F.	890-930	1,050-1,170	960-1,020	800-870(?)	820-860
6. Pressure, lb. per sq. in.	350-600	20-50	400-700	substantial	7-15
7. Recycling (usual practice)	oil	oil	none	hydrogen-rich gas	none
8. Yield, per cent‡	35-63	45-60	70-85	80	60-80
9. Octane number of product†	60-70	70-95	68-80	77	76-81
10. Susceptibility to tetraethyl lead	fair	poor	poor	fair(?)	good
11. Cost of plant, $ per daily bbl.‡	100	120	50-80	150-200(?)	250-300
12. Cost of operation, cts. per bbl. produced‡	40-75	50-80	15-50	25-50(?)	35-70

*Only one report available. §Note that high-gravity stocks are required if high yields are made. †The octane numbers of the catalytic gasolines are much higher by the Research Method. ‡Approximate. Dependent on stock, size of plant, and upon utilization of other equipment.

Operating Ideas

Wire Reinforcement on Mud Hose

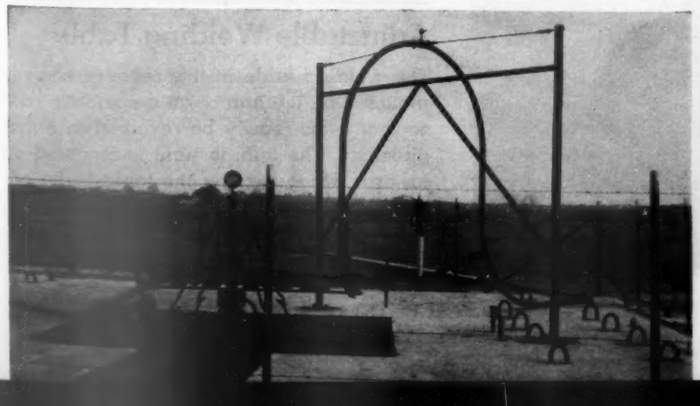
Old-style hose connections required an outer clamp for holding the hose on the nozzle and these clamps at the same time provided some reinforcement at the point of greatest wear. Newer hose con-

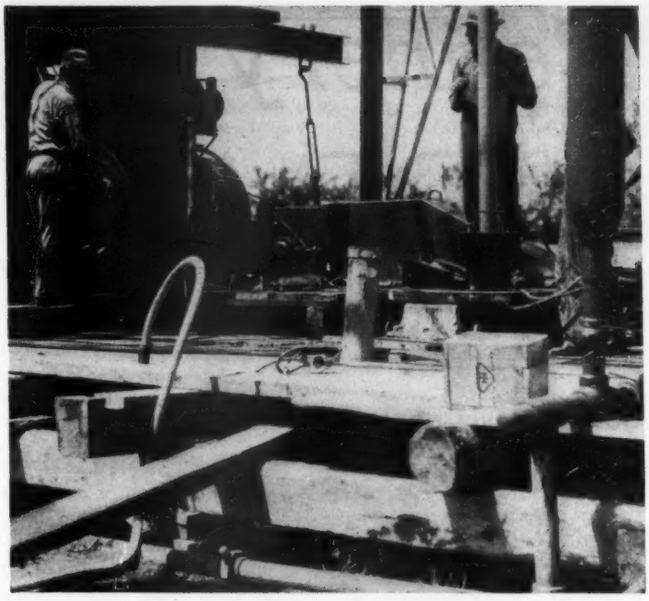


nections are built into the hose or are pressed in and no clamps are used. While drilling is in progress, the mud hose is in constant movement due to the pulsations of the reciprocating pump and the wear from this movement is concentrated at the hose connections. One drilling crew uses heavy wire wrapped tightly around the hose for about 16 in. below the connection. The wire is tack-welded in place. The wire is not intended to assist the clamp but merely to reduce working and wear at that point.

Support for Expansion Loops

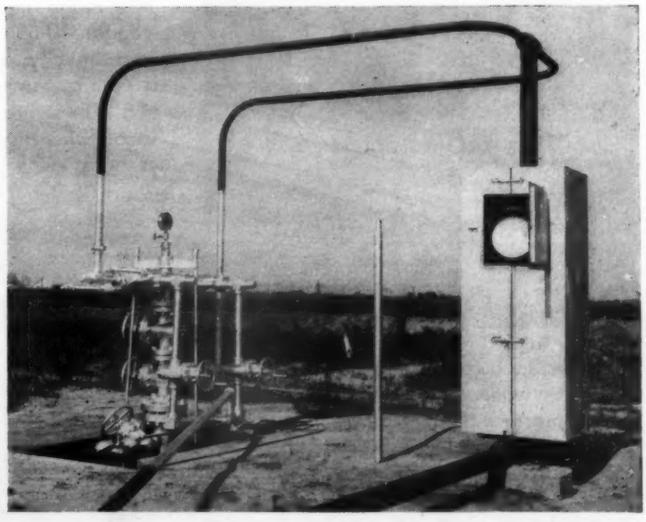
Due to the high pressures and the temperature range handled, expansion loops are essential to the safe and uninterrupted operation of the input lines on repressure projects. However, trouble is sometimes experienced when breaks occur in the loops due to their not being properly supported. Picture shows the system used by one company in Louisiana for preventing damage to the input lines. A bridge made from pipe setting on the concrete apron around the well is equipped with adjustable cables which fasten at the top of the loop. Vibration of the line, with consequent damage to the well connections, is thereby eliminated.





Simple Method of Washing Drill Pipe

Where the maintenance of the drilling fluid is a problem, most contractors now use rubber pipe wipers which fit around the pipe and strip the mud from it. On shallower wells where water in the mud is not particularly harmful, the old system of washing with water is sometimes used. Instead of making a number of pipe connections to run the water under the floor and between the rotary table and surface pipe, some drilling crews use the method shown. This consists of a straight piece of 1-in. pipe with an elbow and a swedge nipple projecting through the floor. The water hose is then stuck in the open end of the swedge and a small stream of water run on the drill pipe as it is pulled from the hole.



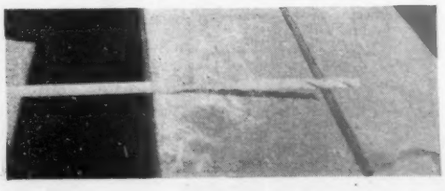
Freeze Box Protects Meter on Repressure Well

One of the most persistent troubles on repressure projects is the condensation of moisture where the lines are expanded for any reason. Often this occurs close to a meter setting and a further reduction in temperature due to expansion results in the lines freezing. This happens even in fairly warm climates and sometimes in hot weather. Picture shows the method installed on a repressure well at Ben Bolt, Tex. The meter is enclosed in a specially constructed insulated box. A trap door on the freeze box allows the meter to be read or the chart to be changed.

Refinery IDEAS

. . . that save $ $ $

Continuously Removes Scale



In order to dispose of deposits removed from condenser-tube walls during cleaning, compressed air is blown through the tube as cleaning takes place. The cutting tool is mounted on a rod and is driven by an air-powered drill. The rod is encased in a tube or sleeve of smaller diameter than that being cleaned. The rod enters this tube through a stuffing box. Just ahead of the stuffing box is a tee through which the compressed air is introduced. The compressed air passes through the annular space between the rod and the tube of the cleaning device and is discharged at the end of the tube just behind the cutting tool. One of the accompanying pictures shows the operator holding the air drill. Between the drill and stuffing box is an inch or so of the rod on which the cutting tool is mounted. Next to the stuffing box is the tee through which the compressed air is introduced. The second picture shows the cutting tool and a short section of rod.

Suspended Pipes Provided With More Flexibility

A modern refinery practice used when making pipe-line connections between two units is to support the pipes on overhead T-posts. One company has designed a substantial and yet flexible link for suspending such lines. A typical assembly is shown here. It was made from salvaged or simple, easily made parts. The supporting post was cut from salvaged H-beam and angle irons, while the suspension link was made new from strap iron and a standard U-bolt. The feature of the link is its simplicity and sturdiness even though it permits the pipe to move in any direction. The upper portion of the link is a 1-in. U-bolt while the lower part is a short piece of ⅝-in. strap iron twisted while hot.

Semiautomatic Can Filler

This can-filling equipment was installed when canned oil was first introduced. Empty cans are brought to the filling machine on the roller conveyor shown in the foreground. They are placed under the filling spouts by hand and the handle above is raised to open the spout. This handle, supported on a fulcrum, remains up as the opposite end is held down by a magnet. While being filled the can rests on scales so balanced that they are depressed as soon as the predetermined amount of oil is run into the can. When the can is filled its weight depresses the scales and breaks an electric contact.

Adjustable Welding Table

The welding table in this refinery shop is mounted on the hub of an automobile axle so that it can easily be revolved in either direction. The hub, in turn, is mounted on an arm which permits the table to be adjusted and held in any position from vertical to horizontal. The arm is on a permanent rigid support bolted to the floor.

Pipe-Line Activity

Kaw Lets Contract for Western Kansas Loop

Kaw Pipe Line Co. let contract to Fredell Construction Co. for the laying of 17 miles of 12-in. for a loop between the company's Chaflin pump station and Chase, Kans. This will increase the capacity of the Kaw system from 65,000 to 85,000 bbl. The loop will be constructed of new pipe. Pipe deliveries have been arriving and work will start as soon as the condition of the ground permits the contractor to move his equipment on the job. In connection with the company's expansion program, some 10-in. pipe has been procured from a gas system in Ohio where it has been in service. Some of this pipe has been removed from the ground and shipped to the Kaw organization in western Kansas. It will be available for further expansion of the system. Several weeks ago the company considered using this 10-in. pipe for the loop.

Sinclair Men Go to Venezuela For New Pipe-Line Project

A party of men from the pipe-line organization of Sinclair Refining Co. in the United States has left for Venezuela where Sinclair interests are preparing to lay a 100-mile, 12-in. crude oil line from the Santa Barbara field in El Chraure on the Caribbean coast northeast of Puerto La Cruz, formerly known as Guanta, where the Mene Grande Oil Co. 100-mile 16-in. pipe line terminates. The party is headed by W. R. Reed, general superintendent; accompanying them there are 14 men including welders, machinists, timekeepers and clerks who will be engaged in construction operations for providing pumping and terminal facilities. The line will be operated by a subsidiary of Venezuela Petroleum Co.

Stanolind River Crossing Near Topeka, Kans., Is Completed

In the latter part of December, the river crossing near Topeka, Kans., was completed for Stanolind Pipe Line Co. as part of the project for the construction of 62 miles of 10-in. loops between Washington, Kans., and Freeman, Mo., to increase the capacity of the trunk line from 30,000 to 45,000 bbl. daily. Work is about one-third done on 54 miles of 12-in. loops on this section of the line which will result in a further increase to 55,000 bbl. daily.

Southern Pipe Line Adds Crude-Oil Pumping Facilities

CORPUS CHRISTI, Texas.—Southern Pipe Line Corp. is replacing pumping units at its Richard King station, field terminus of its Richard King-Corpus Christi 6-in. trunk line, with facilities that will provide a 50 per cent increase in handling capacity.

Three 4½-in. by 10-in. duplex power pumps, each V-belt driven by a 98-hp. (at 1,200 r.p.m.) gas engine, are being installed. Operated in parallel, these units will have a capacity of 15,000 bbl. of oil daily at 950-lb. operating pressure.

Replaced are three 5-in. by 10-in. duplex power pumps, each driven by a 60-hp. gas engine. These have a capacity of only 10,000 bbl. daily at 450 lb. operating pressure.

Feeding this station are not only the gathering system within the Richard King field, but also lines from Wade City, Orange Grove, Reynolds, Stratton and other nearby fields in which the company purchases. The main line from the station to Corpus Christi is 29 miles long.

Replacements necessitate minor changes in piping and manifolding.

Panhandle Eastern Starts Construction in Michigan

Work began last week for the construction of 45 miles of 12-in. between Saginaw and Flint, Mich., for Panhandle Eastern Pipe Line Co. Construction has been contracted by I. C. Little and H. C. Price Co. Headquarters have been established at Saginaw. The total amount of line contracted for the Michigan project is 160 miles. The present program calls for pushing the laying of the Saginaw-Flint line before the weather becomes bad. Already about 4 miles have been laid and the weather has been as good as would be reasonable to expect at this season. The remainder of the line will be laid later in the year when conditions are favorable. Work is also going forward for the laying of 45 miles of 8-in. between Peoria and Galesburg, Ill., which has been contracted by Oil States Construction Co. and H. C. Price Co.

Natural Gas Pipeline Pushes Work on Muscatine Loop

About 60 miles of 26-in. pipe has already been laid for the 90-mile loop on the trunk line of Natural Gas Pipeline Co. of America near Muscatine, Iowa. Recent snow has interfered with the progress of the project but it is expected that the loop will be completed in 30 days. Contractors are W. A. Bechtel Co. and H. C. Price Co.

Standard of Louisiana Lays Outlet at Bayou Sale, La.

Latex Construction Co., Houston, Tex., has received contract and is preparing to start construction on the Standard Oil Co. of Louisiana 26-mile combination 4-in. and 6-in. oil line from the Bayou Sale field in St. Mary Parish, Louisiana, to the company's main line near the town of Franklin, La.

Bayou Sale was opened this year and while development is in the early stages production has extended over a wide area, and it appears to be the most prolific field to be opened in Coastal Louisiana during the year. The field is being developed by the Humble Oil & Refining Co., and Atlantic Refining Co. which have completed five producing wells, having a daily initial production of 1,389 bbl.

Expansion of Phillips System Is Under Way

Several miles of pipe were laid in Missouri last week when construction began for the expansion of Phillips Petroleum Co.'s gasoline pipe-line system. According to the plans, about 70 miles of 8-in. pipe will be laid in short loops of 7 to 8 miles in connection with the section of the trunk line between Harrisonville and St. Louis, Mo. In the middle of this week, construction is also starting for the laying of 50 miles of 8-in. from the company's pump station at Paola, Kans., to a terminal at Kansas City, Kans. Construction has been contracted by O. E. Dempsey Construction Co. and H. C. Price Co.

New Line Serves Chapel Hill Area

Shortly after the first of the year, the Sinclair organization will build a 10-mile 4-in. pipe line from the East Texas field to the Chapel Hill pool in eastern Smith County. The company also will build a 6-in. gathering system in the pool, and will extend it as new crude production is found.

Pipe-Line Personalities . . . . . D. D. Irwin

D. D. IRWIN, president, Pure Transportation Co., Chicago, Ill., was born in Chicago in 1887 and studied mining engineering at Yale, obtaining the degree of mining engineer after 2 years of graduate work in 1911.

The next 2 years he was engaged in geological and reconnaissance work in Arizona, New Mexico and Old Mexico. About this time he decided that operating was more interesting than examination work and required less walking. He worked up from timberman, shift boss and mine foreman jobs to general superintendent at one time or another at Phelps Dodge Corp. mines at Nacozari, Sonora, and at Bisbee and Douglas, Ariz., and also spent a year in Alaska as general superintendent of the Kennecott Copper Corp. mine at Kennecott, Alaska.

In 1928 he left Phelps Dodge to become general manager of Roan Antelope Copper Mines, Ltd., an English company, which owned a large comparatively undeveloped copper property in northern Rhodesia, Africa. For the next 5 years he had the interesting job of completing the exploration work by diamond drilling, developing the mine and building a plant, including a smelter, capable of producing and treating 9,000 tons of ore a day, and bringing into production one of the large low-cost copper-producing properties of the world. Among other things involved was bringing under malarial control an area equal to 25 per cent of the controlled zone of the Panama Canal.

Having completed the construction job and brought the property into successful operation, he returned to the United States in 1933 and joined the Pure Oil Co. in October of that year. Since that time he has been president of their various pipe-line and shipping subsidiaries, in general charge of all forms of transportation, and the purchase and sale of crude oil.

He is a member of the A.P.I. central committee on pipe-line transportation and the regional committee for the eastern district on measuring, sampling and testing crude oil, and is vice chairman of District 2 transportation committee for the petroleum coordinator for national defense.

Mr. Irwin has recently been called to Washington, D. C., to do some work for Metals Reserve Co., a subsidiary of Reconstruction Finance Corp., and will be away from his regular duties on a leave of absence of several weeks.

150 LB. CAST STEEL GLOBE VALVES IN LINE WITH THE GREAT NEED OF *Today!*

Reading-Pratt & Cady Fig. 1511 Cast Carbon Steel Globe Valve with 12-14 Chrome Trim. 230 lbs. at 100°F.—190 lbs. at 300°F.—150 lbs. at 500°F.—100 lbs. at 750°F.

Standard face to face dimensions. A valve for processing services where temperature, concussion or safety rather than pressure requires the use of cast steel. Heavy body walls. Moving parts quickly renewable at the cost of a minimum of strategically important metals.

Materials are scarce! Conserve them by installing valves which under the gaff of twenty-four-hour operation do not require early replacement and the repeated use of critical materials.

Before buying new valves, take advantage of renewable features. Replace worn parts, using critical metals in parts still serviceable.

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

The holiday season caused a considerable decline in the number of reported completions, although this drop was not nearly so great as during other years. Lack of reports from many areas because of the holiday have made the table of completions more of an estimate than a detailed report. As nearly as can be estimated, however, completions were down 54 with oil wells declining by 46, gas wells by 1 and dry holes by 7.

Some discoveries reported this week were of greater than average interest. The report of oil in the Clear Fork at Wasson adds to the interest shown this formation following the discovery near Lubbock some months ago. In Kansas, shows reported in the Mississippian along the west flank of the Nemaha ridge north of Lost Springs suggests that production may be pushed farther in this direction but, possibly more important, it may revive the search for oil in the Salina basin to the west. In eastern Colorado, two shows are reported in pays whose identity is not yet established, but these showings, added to the discoveries in Kearny County cause this area to share with northern West Texas in interest next year.

It has been pointed out that better results appear to come from pushing out a short distance from production than in rank wildcatting. As the year closes several promising areas are under development flanking major producing areas and favorable showings in these sectors suggest the possibility that wildcatting in 1942 may reverse the trend of recent years and bring in new oil fields to meet all requirements.

NORTH LOUISIANA: The Pettit lime pay at Haynesville has yielded a 700-bbl. well 1½ miles from the discovery. Other tests have shown oil in the Pettit but have not been commercial producers, indicating the spotty character of the new pay (p. 68).

LOUISIANA GULF COAST: A new sand produced in the Delta Duck Club field and in Delacroix Island oil was obtained in a test ½ mile from the dry gas discovery well. A new and deeper Wilcox pay has been found at Neale (p. 68).

CALIFORNIA: After producing consistently above the Bureau of Mines estimate of demand, California operators are now protesting over an increase in the estimate. Falling demand and disorganized transportation are reported responsible for the change in point of view. Some fields depending entirely on marine transportation may be greatly restricted (p. 64).

TEXAS GULF COAST: A shallow Wilcox sand test near Lovelady, Houston County, is reported to be flowing oil and a successful completion here would mark the third shallow Wilcox pool in Texas, the others being Kittrell and Clay Creek. Another Jackson County field is in prospect between Ganado and Mauritz (p. 67).

ALBERTA: A test 3½ miles north of the Steveville discovery well reports 156 bbl. from a sand above the Madison lime pay. The discovery is the only one of several wells in the field now on production (p. 70).

MONTANA: The Lander pool, or West Cut Bank extension, has been extended to the west (p. 79).

WEST TEXAS: The largest producer in western Reagan County's new Ellenburger pool has been completed as a ¾-mile extension well. A new deep pay has been located in Wasson by Amon Carter's deep test. The well was drilled to the granite and plugged back to make a good flow from the Clear Fork at 7,200 ft. The Clear Fork, which showed production in the Lubbock area some months ago is attracting more attention (p. 66).

NORTH TEXAS: Ellenburger production in K.M.A. has been stepped out another mile to the east. Indications are that Clay County may have its first Ellenburger production. The Superior test which showed oil in Ordovician lime is 40 miles from nearest production from that pay (p. 75).

SOUTHWEST TEXAS: After having been extended 1 mile southeast, the McAllen field appears likely to get a 2-mile north extension. This is one of the large gas-distillate structures which, following Agua Dulce, have yielded flank oil production. Wilcox tests in Bee and Zapata counties are reported showing gas and distillate. The Chittim anticline in Maverick County showed oil production when the Georgetown lime yielded a 20-bbl.-an-hour flow (p. 67).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended December 27, 1941)

	Oil	Gas	Dry	Total	Footage	Tl. comp. to date 1941	Tl. comp. to date 1940
N. Y., Pa., and W. Va.	97	25	5	127	288,304	5,949	5,487
Ohio	5	7	13	25	58,443	1,685	1,521
Indiana	6	2	2	10	14,123	513	466
Kentucky	7	3	2	12	15,071	652	613
Illinois	32	1	18	51	124,778	3,807	3,738
Michigan	13	5	8	26	68,452	944	1,111
Kansas	18	3	12	33	105,690	2,109	1,824
Nebraska	0	0	0	0	0	82	43
Missouri, Iowa	0	0	0	0	0	37	36
Oklahoma	22	4	12	38	124,000	1,894	1,796
Texas:							
North Central Texas	33	1	18	52	119,204	2,736	2,732
West Texas	21	0	0	21	85,100	2,267	1,843
Texas Panhandle	8	2	2	12	34,792	711	551
East Texas	9	1	3	13	65,675	1,017	619
Texas Gulf Coast	18	0	2	20	124,000	1,073	1,158
Southwest Texas	23	6	11	40	168,000	1,859	2,053
Total Texas	112	10	36	158	596,771	9,663	8,956
North Louisiana	7	2	12	21	81,000	787	664
Louisiana Gulf Coast	8	0	2	10	83,000	844	994
Total Louisiana	15	2	14	31	164,000	1,631	1,658
Arkansas	1	0	0	1	6,000	194	174
Mississippi and Southeast	4	0	0	4	15,300	278	194
Montana	4	0	0	4	11,833	304	240
Wyoming	0	0	1	1	1,034	176	159
Colorado	0	0	0	0	0	33	18
New Mexico	3	0	1	4	14,000	280	594
California	9	2	6	17	100,673	1,110	1,005
Total United States	348	64	130	542	2,277,782	31,341	29,633
Total previous week	394	65	137	596			
Week ended Dec. 28, 1940	274	47	95	416			

ILLINOIS: McClosky lime pay has been extended in the North Noble, Bone Gap and Calvin pools. The year closed with the most uneventful week of the basin play (p. 71).

MICHIGAN: Reduction in production in the flush fields of Reed City, Headquarters and Winterfield is required to meet the new allowables recommended by the OPC. A gas showing has been reported near Albion, 60 miles from the nearest production (p. 72).

KANSAS: First production is reported for Dickinson County along the west flank of the Nemaha granite ridge. A 2½-mile south extension to Raymond is in prospect and Trapp is also extended south. The Arbuckle is showing in a new area northwest of Zenith (p. 69).

OKLAHOMA: Development of the southern sector continues with many tests starting in the South Woolsey pool. A test to penetrate the McLish has been started on the Madill anticline (p. 69).

COLORADO: Wildcats in Cheyenne and Kiowa counties are reported showing saturation. This drilling is related to the Kearny County, Kansas, play and successful completion of either test will greatly extend activity (p. 79).

Northern West Texas Play Finds Production in New Pays

By D. H. STORMONT

FORT WORTH, Tex. — Outstanding feature of West Texas drilling activity during recent weeks is the greatly extended search for new oil reserves undertaken in the north Permian basin. Several tests are drilling or have been staked in counties at present without oil production, the activity centering in Hockley County but spreading into practically all counties nearby. In so far as drilling in proven areas is concerned, activity is somewhat lower than in earlier months of this year and at this time a year ago; drilling in the Slaughter field accounts for almost one half of the total number of rigs at work in the northern area.

At present there are some 14 wildcats drilling or preparing to start wells in the north basin, nearly all of which are projected to depths below 5,000 ft. Within the past month an additional 10 deep tests were completed, one of which resulted in a commercial oil producer to extend the area's productive limits over 40 miles to the north and east. Of the wildcats now drilling, one shows some possibilities of opening first commercial oil production in Crosby County, almost 30 miles east of the recent Lubbock discovery. In northwestern Dawson County a small pumping well seems assured at another wildcat, and in Gaines and Hockley counties two tests are showing for possible oil discoveries.

The increasing exploration activity is primarily caused by a search for new oil reserves rather than a result of nearness of lease expirations. Most leases held by companies in these north basin counties do not begin to expire until about 1946. Little leasing was done in this area until about 1936 and 1937 when the Slaughter and Wasson fields were discovered. Since then large blocks have been acquired by many companies: Hockley, Cochran and Yoakum counties are leased almost solid; Terry, Lynn and Lubbock counties are more than 50 percent leased; and the surrounding counties all contain large blocks of leased acreage. Much of the exploratory drilling is being done as the result of farmouts from major companies to independent operators.

Large Fields Developed

West Texas operators generally have come to regard the north Permian basin as the area's greatest potential oil reserve. In the past 2 years the Wasson and Slaughter fields have undergone such extensive development that they are now the second and third largest fields in Texas in so far as areal extent is concerned. It is expected that their productive limits will be still further extended. Due to the hundreds of thousands of acres in the area yet undrilled, operators feel that other such large fields remain to be discovered.

Oil production possibilities of the north basin have been recognized for the past several years but for some time the area's Permian pays were believed to lack sufficient porosity to yield oil in commercial quantities. This belief was predicated largely upon minor oil showings developed from tests drilled in Cochran County prior to the discovery of the Duggan field (now a portion of Slaughter) in that county in 1936. Since then, despite comparatively low allowables and at times, pipe-line proration, the Wasson, Slaughter and Seminole fields have been developed. The size of these fields and the high initial potentials registered by many producers, and their performance, show that the area was at first greatly underrated.

In this northern area the massive limestone deposits of the south producing district appear to be missing; there also appears to be little likelihood of finding oil production in the pre-Permian horizons (mostly Ordovician) which are growing in importance in the south basin. The frequent alternations of marine and evaporite deposits in the Permian system, however, adds to the number of possible pay horizons in the north basin.

The pays at Wasson, Slaughter and Cedar Lake fields are generally considered to be of San Andreas age. This horizon is productive in a number of lime fields in Lea County, New Mexico, but in the south basin it is nonproductive, with the equivalents of these limestones being a complex mixture of red beds, anhydrite and salt. The recent L. C. Harrison-Nairn oil discovery in Lubbock County is reportedly producing from the Clear Fork lime, age of the producing horizon in the Panhandle and older than the San Andreas. The exploration in the north basin is, therefore, a search for oil in horizons that heretofore have not been too widely exploited in West Texas.

During the past 2 years wildcatting has resulted in the opening of only two new pools that offered sufficient encouragement to warrant much development. These were Cedar Lake in northeast Gaines County and the Ownby pool about 7 miles northwest of the Wasson field in Yoakum County; the former now has some 30 producers

DEVELOPMENT OF THE NORTH BASIN'S FOUR LARGEST FIELDS

	Number of wells			Proven	Dly. av.	Accum.	Active
	Flowing	Pumping	Total	acreage	prod. (bbl.)	prod. (bbl.)	rigs
Cedar Lake:							
January 1, 1940	3	0	3	640	110	7,255	2
January 1, 1941	9	2	11	5,000	246	54,518	6
December 1, 1941	11	19	30	5,000	910	219,448	5
Seminole:							
January 1, 1938	4	0	4	2,500	184	28,053	2
January 1, 1939	12	0	12	5,000	506	153,497	3
January 1, 1940	22	0	22	7,000	905	330,936	15
January 1, 1941	183	0	183	11,000	4,435	1,451,313	24
December 1, 1941	278	5	283	11,000	9,210	3,671,487	8
Slaughter:							
January 1, 1938	4	1	5	9,000	182	43,323	5
January 1, 1939	19	3	22	17,000	1,034	317,255	3
January 1, 1940	55	7	62	25,000	3,405	983,578	11
January 1, 1941	179	12	191	50,000	2,985	2,233,630	44
December 1, 1941	755	28	783	60,000	23,000	6,242,057	78
Wasson:							
January 1, 1938	31	1	32	20,000	3,137	189,973	22
January 1, 1939	221	9	230	41,000	12,316	3,129,347	29
January 1, 1940	596	16	612	55,000	25,300	9,068,293	76
January 1, 1941	1,050	22	1,072	58,000	28,250	20,911,311	48
December 1, 1941	1,258	32	1,290	58,000	41,500	31,875,921	25

DATA ON ACTIVE WILDCATS AND RECENT COMPLETIONS SHOWN ON MAP

	Remarks—	Status—
Bailey County:		
Broderick & Calvert-A. G. Carter 1 G. H. Hayward	El. 3,923 ft., top anhydrite 2,250 ft., top salt 2,310 ft.	Dry at 5,601 ft.
Borden County:		
Texas Pacific 1 M. L. Miller-Looney	3,800-ft. cable-tool test	Drilling 1,020 ft.
Anderson-Prichard and Osage 1 Clayton-Johnson	El. 2,912 ft., top anhydrite 1,520 ft., first lime 3,210 ft., solid lime 3,320 ft.	Dry at 4,503 ft.
M. L. Richards et al 1 W. R. Drumm	El. 2,439 ft., top lime 2,140 ft.	Dry at 3,060 ft.
Crosby County:		
Callihan & Wagner 1 Wahlenmaier	El. 2,655 ft., top anhydrite 710 ft., Yates 1,150 ft., San Andres lime 2,116 ft., Clear Fork lime 3,370 ft., total depth 4,050 ft.	Made 20 bbl. fluid daily, mostly oil, after P.B. to 2,930-3,000 ft.; testing.
Dawson County:		
Placid 1 Higginbotham	El. 2,963 ft., top anhydrite 1,860 ft., top solid lime 4,485 ft.	Dry at 4,983 ft.
Albaugh & Richmond Drlg. 1 J. J. Handley	El. 3,068 ft., top anhydrite 2,215 ft., salt 2,290 ft., Yates 3,050 ft., brown lime 4,060 ft., San Andres lime 4,590 ft.	Swabbed 100 bbl. oil in 24 hr. after 700-qt. shot at 4,910-77 ft.; est. good for 75-bbl. pumper.
Dickens County:		
Deck et al 1 I. J. McMahan		Spudded and shut down.
Gaines County:		
Amerada 1 Ruth Hudson	El. 3,616 ft., top anhydrite 2,130 ft., Yates 3,028 ft., brown lime 4,040 ft.	Swabbing 14 bbl. oil and 10 bbl. water at 5,016 ft.
A. G. Carter 4-D Wasson	Deep test in south portion of Wasson pool.	Swabbed 5½ bbl. oil, cut 3% in 24 hr.; S.D. 11,-108 ft.
Likens & Hall 1 Jones	El. 3,667 ft., top anhydrite 2,310 ft., brown lime 4,100 ft.	Drilling below 6,400 ft.
Adams & Bradley 1 University	8,000-ft. test in Dalmont area.	Location.
Hockley County:		
Anderson-Prichard and American Drlg. 1 Ellwood	El. 3,534 ft., top anhydrite 2,090 ft., salt 2,195 ft., solid lime 3,955 ft.	Drilling below 5,800 ft.
Tide Water 1 Commerce Trust Co.	3 miles northeast of Slaughter.	Drilling below 1,800 ft.
Stanolind 1 V. J. Williams	El. 3,515 ft., top anhydrite 1,960 ft., lime 3,652 ft.	Coring below 4,755 ft.
Lubbock County:		
Harrison-Tobe Foster 1 Steck	El. 3,247 ft., top anhydrite 1,670 ft.	Dry at 5,530 ft.
Benton & Roach 1 Stanolind-Texas Land & Mtg.	6,000-ft. test.	Location.
L. C. Harrison et al 1 Nairn	El. 3,203 ft., top Yates 1,930 ft., lime 2,690 ft., San Andres 3,100 ft., Clear Fork, 4,870 ft.	Comp. Nov. 12 for 165 bbl. oil and 10 bbl. water, pumping, 4,884-5,-002 ft.
Lynn County:		
Trinity Drlg. 1 Dan Auld	El. 3,226 ft., top anhydrite 2,200 ft., salt 2,300 ft., Yates 3,060 ft.	Dry at 5,207 ft.
Motley County:		
Humble 1-D Matador Ranch	Top granite 6,262 ft.	Dry at 6,269 ft.
Terry County:		
American Drlg. et al 1 Hufnall-Texas Pacific	El. 3,569 ft., top anhydrite 2,420 ft., brown lime 4,160 ft., San Andres 4,520 ft.	Junked hole at 5,435 ft.
Yoakum County:		
Honolulu 1-13 Wright	El. 3,569 ft., top brown lime 4,210 ft., San Andres 4,560 ft.	Dry at 5,410 ft.
Sinclair Prairie 1 Kleiner	El. 3,534 ft., top anhydrite 2,335 ft., Yates 3,360 ft., San Andres lime 4,710 ft.	Fishing for baller at P.B. depth of 5,425 ft., T.D. 5,600 ft.
Dunigan Bros. & Brahaney 1 Alice Henard	5,500-ft. test.	Drilling 995 ft.

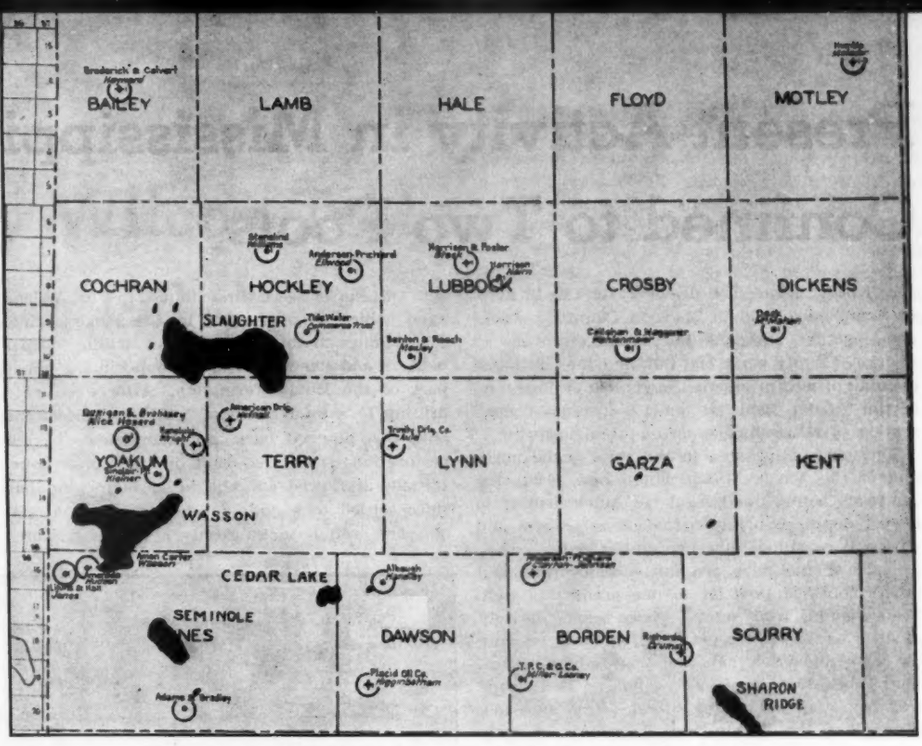
and the latter about 6. The other discoveries have received little attention and remain one or two-well pools. Potentialities of the Lubbock discovery, of course, are yet to be determined.

With the Wasson and Seminole fields practically drilled up and only the Slaughter field offering a large number of undrilled proven locations, north basin operators therefore are faced with the necessity of finding new oil reserves. How widespread the search has become is reflected in the accompanying map and table of active wildcats and recently completed tests.

Of the active wildcats, the Dawson County test of Ray Albaugh and Richmond Drilling Co. appears to be the most assured pool opener. The wildcat is their 1 J. J. Handley, located in SE SW Section 36, Block M, E.L. Survey, which is making about 75 bbl. daily from the San Andres. The section was given a 700-qt. shot at 4,910-77 ft. after which the well swabbed 100 bbl. of oil in 24 hours through casing with fluid level between 1,700-1,800 ft. Rods and 2-in. tubing have been run but final completion is being delayed until storage is set.

In Gaines County, Amerada Petroleum Corp. is swabbing about 5 bbl. of oil with 15 bbl. of water from its 1 Ruth Hudson, bottomed at 5,016 ft. The wildcat is located 3 miles west of the Gaines County portion of the Wasson pool. In the Wasson pool hopes for completing A. G. Carter's 11,108-ft. test as a producer at that depth appear to have been unsuccessful; the test was shut down for orders after swabbing only small quantities of oil.

Drilling in proven areas in the north basin is largely confined to the Slaughter and Wasson fields, the two pools accounting for 103 of the 156 rigs operating in the area. As is shown in the accompanying table, the Slaughter field has been extended until its productive acreage exceeds that of Wasson. The latter field now has over 1,300 producers and its proven area of 58,000 acres is almost all drilled. Slaughter, however, with 500 fewer wells and a slightly smaller well spacing, has some 900 proven locations yet undrilled. About 80 rigs are at work in this field and it is expected that activity will remain at near this level most of the coming year.



Map of northern West Texas basin showing fields and important wildcats

Pressure Control at Schuler Reduces Gas-Oil Ratios

By R. MARNE SANFORD

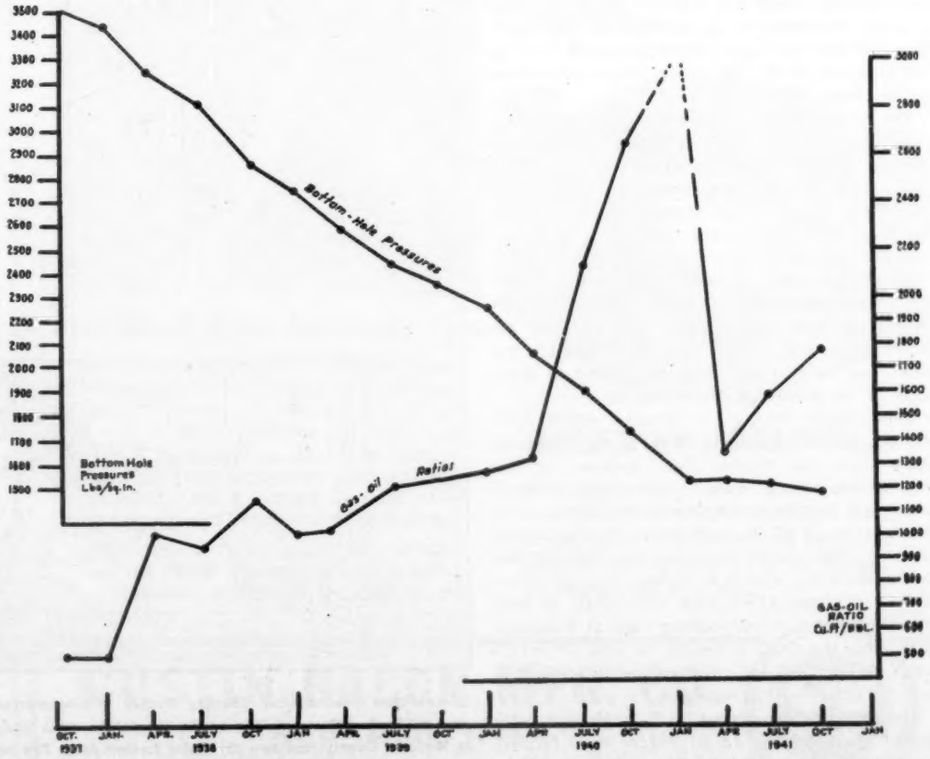
THE accompanying graph of the relationships between the bottom-hole pressures and the gas-oil ratios in the Schuler field, South Arkansas, for the past 3 years is an excellent illustration of what repressuring and the maintenance of accurate records and statistics can do for a field.

At the inception of the field in the fall of 1937 the bottom-hole pressure was at about 3,500 lb. per. sq. in. while the gas-oil ratio was at about 500 cu. ft. per barrel of oil. As the field continued to grow the pressures steadily dropped off and consequently more gas was required to lift a barrel of oil from the reservoir. About the start of the year 1940 when the pressure had dropped to about 2,300 lb. and the gas-oil ratios had increased to about 1,350 to 1, work was started toward a repressuring project for the field. The Arkansas Oil and Gas Commission sent engineers into the field to take carefully regulated gas-oil ratio tests over a period of a few months, and the results were that on the graph the ratios show a very definite jump, up even above 3,500 to 1 in the latter part of 1940 and early months of 1941.

However, when the commission reports showed the high ratios for the field, plans were started to completely shut in the wells with the highest producing ratios. This accounts for the sudden decline in ratios from January to April in the year 1941. Meanwhile the repressuring project was started in the spring of 1941 and some of these high-ratio wells were opened for short periods of time to determine which ones were definitely responsible for the high ratio mark of the entire field. Thus the curve trends immediately back upward from April of 1941. When these high-ratio wells are weeded out the curve will level off materially.

On the bottom-hole pressure curve it may be seen that the pressures leveled off decidedly at the start of 1941. This was due to the shutting in of the high-ratio producers thus conserving the gas pressure of the reservoir. Under regulated conditions of repressuring since April of 1941 the bottom-hole pressure curve has remained comparatively level and the gas-oil ratio curve has

(Continued on Page 65)



The above graph shows the relationship between bottom-hole pressures and gas-oil ratios in the Schuler field, South Arkansas, since its discovery late in 1937

Present Activity in Mississippi Confined to Two Pools

JACKSON, Miss.—The discovery of the Pickens-Sharpsburg field in Madison County 2 weeks ago, together with the Cary field discovery in Sharkey County early last fall, and the continued opening of new productive sands in the north end of the Tinsley field, all tend to increase consideration of Mississippi as an oil-producing state.

The most active area in the state is the north end of the Tinsley field, where new producing sands are being found regularly. Much drilling to deeper depths is being carried on at present and this will continue into the coming year.

Some of the pays are fairly widespread and others confined thus far to one productive well. Tests finding from one to three sands entirely pinched or locally faulted out frequently encounter some altogether new sand with some saturation. Probably several more sands or local traps will be found containing oil at different levels throughout the Eutaw and Tuscaloosa sections during the coming year.

The several pay zones discovered during the past year cannot be attributed to any one actual discovery well for each zone. In some instances the well to first penetrate the zone was not even completed in it. These various producing levels in North Tinsley are the Woodruff, Perry, Slick, Stephens, Lammons, McGraw, and Powell zones. All are located within a 1,200-ft. section composed of the Selma, Eutaw and Tuscaloosa formations.

The Cary field discovery well in Sharkey County last September was a second attempt for the British American Oil Producing Co. The initial try was abandoned as a crooked hole with drill-stem stuck at 4,027 ft. Strong shows of oil were found in the Selma formation from 3,283-84 ft. After skidding the rig, 1-A Houston was started in NW NE SW 23-11n-7w and was drilled to a total depth of 4,355 ft., or 4,253 ft. subsea. The well checked about flat with the abandoned hole and oil was found in the Selma from 3,281-96 ft. The various zones were drill-stem tested back up the hole and completion finally was accomplished in the Selma section.

The well was tested and retested in attempting to shut off water and was finally completed in October of 1940 for 46 bbl. of oil and 120 bbl. of water daily through perforations from 3,278-80 ft. in the top of the Selma chalk. This test topped the Midway at 2,807 ft., the Selma at 3,278 ft. and was bottomed at 4,355 ft.

There has been no development in the field since the completion of the discovery. The well is making increasing amounts of water and the structure is not very pronounced. Possibly another test or two will later be drilled to learn more of the nature of the structure.

Undoubtedly having the greatest effect upon the general oil conditions in the State of Mississippi since the Tinsley field opening, is the Pickens-Sharpsburg field in Madison County. Lease and royalty trading have been active since the first shows of oil were found. Phillips Petroleum Co. has staked locations for three offsets to the discovery with a southeast diagonal offset already drilling. Allied Pipe Line Corp. is constructing a new 10-car loading rack at Vaughan, Miss., near the field, to handle the new oil anticipated. Several outside tests are being started to test the extent of the structure.

The field was discovered by C. L. Morgan, who drilled his 1 Johnny on an 80-acre tract farmed out from the Carter Oil Co. The well was strictly an exploratory hole, thus no definite depth was set. Oil shows were first found in the Wilcox zone, which is productive in the Pickens field just 2 miles to the northwest. In drilling deeper both oil and some water were found in the upper part of the Eutaw formation. After eventually drilling to a total depth of 5,455 ft., subsea, the hole was plugged back and completed through perforations from 4,827-34 ft. in the Eutaw zone. Initially it flowed 427 bbl. in 12 hours, but has since settled to a daily production of about 290 bbl. The well is making only a little salt water and this is believed coming from below the perforated zone. The well reported tops as follows: Wilcox 1,206 ft., Midway 3,050 ft., Clayton 3,810 ft., Selma 3,840 ft., Eutaw 4,778 ft., and base of the Wilburn at 4,889 ft. These correspond to subsea tops marked on the cross-section.

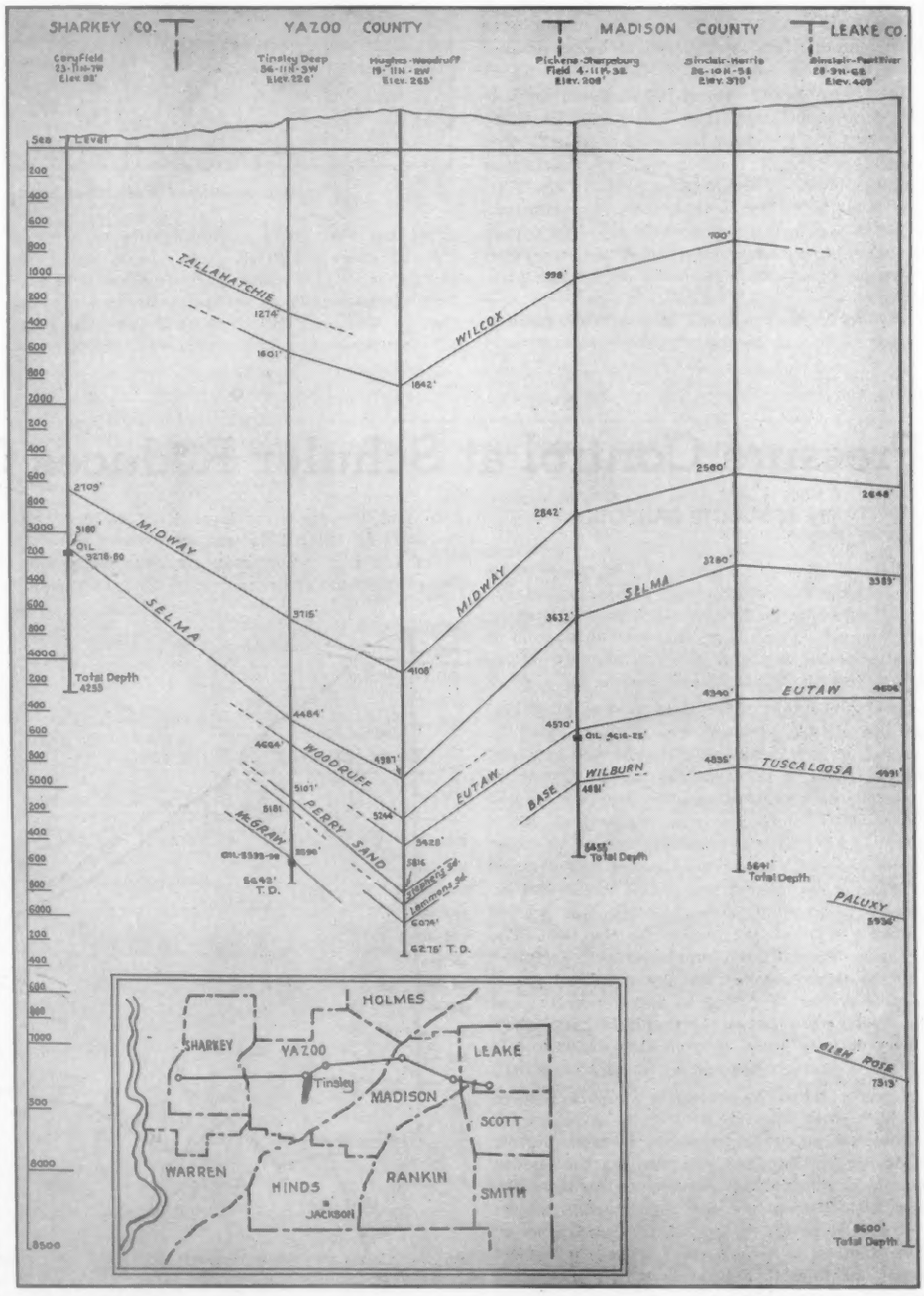
The Pickens-Sharpsburg oil on early tests showed 12 per cent salt water. The oil is 39 gravity at 71°.

Geology of Area

The basement complex of this general area is not at all well known, but is believed to have a large influence on the presence or absence of structures favorable for oil, both on the Sharkey Platform, or Yazoo Delta area as it is called, and on to the east in the basinal area.

The Monroe uplift in northeastern Louisiana overlies an igneous intrusion, the eastern limit

(Continued on Page 67)



Cross-section from western Sharkey County to southwestern Leake County and embracing the Cary field discovery in Sharkey County, deep production in the north end of the Tinsley field, the Pickens-Sharpsburg discovery in Madison County and two dry holes farther east. The section shows the general attitude of the formations down to the basement rocks. The several various sands mentioned in the two Yazoo County tests are all productive at different points in the north end of the Tinsley field

TEXAS GULF COAST

Houston County Wilcox Test Reported Flowing Oil

By NEIL WILLIAMS

HOUSTON, Tex.—C. P. Culmore et al 1 G. T. Lundy, a wildcat located along the upper Wilcox trend about 1½ miles southeast of the town of Lovelady, Houston County, was showing promise of production last week as it flowed a small stream of mud and oil while testing through a ¼-in. choke. Eighty per cent of the fluid was reported to be oil and the balance was drilling mud. Total depth of the well was 5,016 ft. and the well is testing the Wilcox sand through perforated casing at 3,215-20 ft. The Wilcox was topped at 2,340 ft. and casing was cemented after side-wall cores at 3,214-20 ft. recovered sand with a good oil odor.

Should the well be completed for a commercial producer, it will be the third shallow Wilcox field to be opened along the Texas sector of the trend, and the second Wilcox sand field for the county. It is located north of the Kittrell field which is, with the exception of the old Clay Creek field in Washington County, the only field in the district to produce from the upper Carrizo-Wilcox.

As the above well was being completed, Magnolia Petroleum Co. was testing 1 W. M. Cameron, a Wilcox test located across the county line in Trinity County. Casing was perforated at 5,702-06 ft., and after the well was washed with clear water it flowed for 5 hours and tubing pressure built up to 100 lb. There was no show of oil or gas and the well was shut down for orders after salt water broke in. Casing was cemented after an electrical survey showed possible production at 5,100 ft., 6,300 ft. and 6,700 ft., and these sands will no doubt be tested.

Information on the completion of Shell 1 McManus, the discovery of Wilcox sand production in the Brushy Creek area, Lavaca County, has been released by the company. With the hole bottomed at 10,998 ft., casing was perforated at 7,725-30 ft., and on a 24-hour test flowing through a ¼-in. choke it gaged 124 bbl. of distillate. Tubing pressure was 2,500 lb. and casing pressure 2,100 lb.

Goodrich Development Starting

Sinclair Prairie Oil Co. has entered the Goodrich field, Polk County, with the staking of location for 1 C. H. Jones, about 1 mile southwest of the field in the A. Viesca Survey. Production from the Cockfield sand was opened in this area about 2 weeks ago by the Pan American Production Co. which has completed two producing wells and is engaged in drilling a third.

Wildcat Reports

In the Chocolate Bayou field, Brazoria County, Phillips 2 Triangle Development Co., an outpost well was waiting on orders at a total depth of 10,001 ft. with no shows of oil or gas reported. The small Discorbis was topped at 6,723 ft., restricted Discorbis at 6,941 ft., large Discorbis 7,316 ft., Heterostegina 7,691 ft., round Marginulina 7,845 ft., flat Marginulina 8,033 ft., and Marginulina No. 7 at 8,220 ft.

On the east flank of the Nash dome, Fort Bend County, Atlantic Refining Co. was preparing to rework 2 Groce after it flowed for 10 hours at the estimated rate of 206 bbl. of oil daily through a ¼-in. choke. However, salt water broke in and the well sanded up. Total depth of the hole is 5,216 ft., and the production test was made through perforated casing at 4,294-4,312 ft.

Jackson County had promise of another producing area, midway between the Ganado and Mauritz fields, where J. G. Mayo et al 1 A. C. Rodesney was drilling in shale below 7,500 ft. Drill-stem testing at 5,069-90 ft. tested 400 lb. working pressure and recovered 90 ft. of oil and mud, while side-wall cores at 5,411 ft., 5,514 ft., 5,734 ft., recovered sand with an oil odor. Another sand was logged at 6,618 ft., but was logged as a gas sand. Casing is expected to be cemented during the week for a production test. Whether this well will open a new field or an extension to the Ganado or Mauritz fields cannot be determined at this time. Main production at Mauritz is from the Frio sand at 5,600 ft., while production at Ganado is from 5,000-5,100 ft. and 6,100 ft.

South of the Anahuac field, Chambers County, Rowan & Nichols Oil Co. 1 W. H. Land, S. P. Donley Survey, continues to be watched with wide interest as additional showings of oil and gas are logged. The well is drilling ahead in shale

(Continued on Page 67)

ROLAGRIP

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No threads, grooves or special ends are required with Rolagrip Pipe Couplings. There is no danger of igniting oil or causing explosions, since no welding is necessary. Rolagrip Couplings allow for expansion and contraction in the lines, permit angular misalignment, and require no anchorage.

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Rolagrips are quickly and easily assembled; only two identical half housings, two bolts, an oil resisting gasket. No special tools or skilled workmen are required.

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Modification of Recommended Allowable Is Necessary

By L. P. STOCKMAN

LOS ANGELES, Calif.—It became quite evident this week that the plan of the petroleum coordinator to set the basis of production in Washington must be modified to the extent that regional chairmen will have authority to change recommended production quotas if necessity demanded. The recommended allowable of 646,200 bbl. per day for the month of January which Secretary Ickes thinks California should produce indicates the Bureau of Mines must be using data from last year. Instead of reducing production, the Bureau of Mines has increased the allowable for the month of January 33,000 bbl. per day in the face of disrupted transportation. E. E. Pyles questioned the wisdom of attempting to produce at this rate and told the conservation committee, "Even though California oil requirements for war and civilian needs were computed at 646,200 bbl daily there is no assurance that the total can be maintained. If we are unable to transport oil in tankers up and down the coast, production of oil will undoubtedly be affected, since part of the production plan for this district is that excessive amounts of oil shall not be added to storage. We have been advised that at least 2 tankers have been damaged, and that all of them have been ordered to make port."

In addition to the necessity of securing a modification in the present plan of the coordinator to set allowables based on changing conditions, especially on the Pacific Coast, it will be necessary to make certain other changes. It has been clearly indicated this week that Washington should not attempt to set the California allowable but should pass this task to the California committee. Washington is too far away and by the time one condition is relayed to Washington another has developed. It is also quite evident that Secretary Ickes or whoever is setting allowables is clearly out of the picture and not familiar with prevailing conditions. It is very necessary that the petroleum coordinator be told that consumption has taken a nose dive and that instead of increasing the demand 33,000 bbl. per day it should have been reduced or left to the discretion of the California Conservation Committee. The local committee is in close touch with conditions and in a better position to make vital decisions.

Potentialities of San Joaquin Valley Discoveries Not Yet Known

California closed the year 1941 with several new fields in the San Joaquin Valley but none of the new discoveries had reached the point where they showed any indication with respect to potentiality. In Fresno County, prospectors found production at Raisin City, Helm, Riverdale, and Jacalitos, and in Kern County Continental Oil Co. proved up the Shafter district as a new producing area. Shell Oil Co., Inc., made the discovery at Raisin City, Wilshire Oil Co. at Jacalitos, and Amerada Petroleum Corp. found production at Helm and Riverdale. Amerada has chalked up a nice record in California from an exploration standpoint as it has made five discoveries since 1935. Amerada's discoveries were at Tracy in 1935, Rio Vista in 1936, Northeast Coalinga in 1939, and Helm and Riverdale in 1941. Tracy and Rio Vista are commercial gas fields, the latter being the largest gas field in the state at the present time. Wilshire Oil Co. is putting the finishing touches on its second well in the Jacalitos dome field and this well should be tanking oil within the next 24 hours. The company cored Temblor oil sand at 3,685-3,701 ft. with 16 ft. of oil sand found at the same depth at which it was cored in the discovery well with allowance for the difference in elevation being made. Discovery of commercial production in the Jacalitos dome area is a personal tribute to Charles A. Son who for many years has maintained that Jacalitos justified additional development. A number of dry holes have been drilled in the Jacalitos area during the past 20 years and now the patience and perseverance of Charles Son and his associates is being rewarded.

The importance of Raisin City, Helm, and Riverdale remains to be determined as a result of additional development and for this reason it may be another several months before Helm and Riverdale stand out as Amerada Petroleum Corp. is proceeding slowly with additional drilling. To date Raisin City has not shown very much to justify the expectation that this field will become an area of primary importance but of course this may change with additional drilling. Every indication to date points to the probable existence of a lenticular condition and this usually means low production per acre and a marked irregularity. It is practically impossible to correlate formations across the Raisin City field with any degree of accuracy which quite definitely indicate the presence of lenses and the absence of a uniform producing measure. The Seaboard zone has already been found to be rather limited in areal extent and the Shell zone is characterized by an extremely high gas-oil ratio which makes both zones of questionable value as far as large production per acre is concerned.

SAN JOAQUIN VALLEY COMPLETIONS

Arvin, Kern County: Richfield 2 Mott, 9-31s-29e, pumped 54 bbl., 28.1-gravity, 40 per cent cut, T.D. 6,355 ft., perf. 5,930-6,155 ft., 6,166-6,355 ft., deepened from 6,155 ft.

Coalinga Southeast, Fresno County: R. S. Lytle 74-7-F, 7-20s-16e, flowed 1,332 bbl., 29.9-gravity, 0.5 per cent cut, 908,000 cu. ft. gas, 21/64-in. bean, pressures 1,050/1,200 lb., T.D. 8,217 ft., perf. 7,686-7,727 ft., 7,760-7,970 ft., 8,010-8,217 ft., Kreyenhagen 6,485 ft., green sand 7,660 ft. completed in Gatchell oil sand of Eocene age 7,695-8,217 ft.

Greeley, Kern County: Standard 11-31 Kern County Land, 18-29s-26e, flowed 3,578 bbl., 35.2-gravity, 1.2 per cent cut, 2,654,000 cu. ft. gas, 32/64-in. bean, pressures 1,250/1,475 lb., T.D. 11,510 ft., perf. 11,274-11,509 ft., completed in Rio Bravo 11,302 ft., and Vedder, 11,333-11,510 ft., both zones of Miocene age.

Superior 2 Moore, 1-29s-25e, flowed 1,648 bbl., 37.3 gravity, 0.2 per cent cut, 1,104,000 cu. ft. gas, 32/64-in. bean, pressures 1,220/1,220 lb., T.D. 11,490 ft., perf. 11,340-11,490 ft., completed in Rio Bravo, 11,338 ft., and Vedder, 11,408-90 ft., both zones of Miocene age.

Midway-Sunset, Kern County: Standard 113-35-B fee, 35-31s-23e, pumped 160 bbl., 28.2-gravity, 5 per cent cut, T.D. 3,226 ft., perf. 2,595-2,645 ft., 2,760-2,935 ft., 3,145-3,220 ft., completed in Midway-Sunset zone 2,600-3,226 ft., Scalez bed 2,593 ft.

Mount Poso, Kern County: General Pet. 3 Heisen, 16-27s-28e, pumped 278 bbl., 16-gravity, 10 per cent cut, T.D. 1,955 ft., perf. 1,854-1,903 ft., completed in Vedder zone of Miocene age 1,911-55 ft.

Shell 2 Griffiths fee, 5-27s-28e, pumped 220 bbl., 15.2-gravity, 40 per cent cut, T.D. 1,800 ft., perf. 1,748-1,800 ft., completed in Vedder zone of Miocene age 1,720-1,800 ft.

Rio Bravo, Kern County: Superior 3-3 Osborne, 28-28s-25e, flowed 1,610 bbl., 39.8-gravity, 0.2 per cent cut, 1,790,000 cu. ft. gas, 32/64-in. bean, pressures 1,125/1,125 lb., T.D. 11,465 ft., perf. 11,272-11,463 ft., completed in Rio Bravo, 11,275 ft., and Vedder, 11,351-11,465 ft., both zones of Miocene age.

Ten Section, Kern County: Shell 55-30-A Kern County Land, 30-30s-26e, flowed 875 bbl., 34.2-gravity, 2 per cent cut, 720,000 cu. ft. gas, 28/64-in. bean, pressures 1,200/1,250 lb., T.D. 8,210 ft., perf. 8,002-8,207 ft., completed in Stevens oil sand of Miocene age.

Tupman, Kern County: Richfield 72-31-B Kern County Land, 31-30s-25e, flowed 392 bbl., 36.4-gravity, 0.5 per cent cut, 880,000 cu. ft. gas, 20/64-in. bean, pressures 500/1,450 lb., T.D. 8,932 ft., perf. 8,308-8,429 ft., 8,492-8,576 ft., 8,830-8,928 ft., completed in Stevens oil sand of Miocene age.

Production of Some Coastal Fields to Be Restricted

The coastal district fields will probably show varying degrees of success from a production standpoint during the next several months under operation of the new conservation plan. As matters stand at present, fields located immediately adjacent to tidewater will probably be forced to restrict production due to disruption of transportation facilities, especially water transportation which is reflecting operation of submarines along the coastline. Such fields as Ventura Avenue, Rincon, San Miguelito, Newhall-Potrero, Aliso Canyon, Del Valle, and other similar fields will probably be allowed to produce ratably because of their location away from tidewater or because they have pipe-line facilities. Capitan and Elwood, however, are definitely in a class by themselves because they depend entirely upon water transportation. The fields in western Los Angeles County in the coastal group will continue to produce at restricted rates but there may be some relief afforded through extension of pipeline facilities. In the meantime, those fields depending upon truck haul will probably continue to operate as usual.

Rincon Deep Sand of Questionable Value

There have been no developments in the Rincon field to change the outlook of this field as far as deep-zone production is concerned. Every indication points to the probability that the deep zones found to date are of questionable value. The two deep zones found in 3-C Hobson of Chanslor-Canfield Midway Oil Co. are both exceedingly tight and appear incapable of producing more than a few hundred barrels per day under favorable conditions. In the company's 3-C Hobson, oil sand has been cored from 9,050 ft. to 10,515 ft. but in spite of this large penetration the well is not capable of producing more than a limited amount of oil daily. This well was recently redrilled to 10,075 ft. and returned to production flowing by heads at the rate of 150 bbl. per day. The lower part of this hole was lost by mechanical trouble and was never tested. It did not look any better than the upper 1,000 ft. of oil sand, however, and there is no reason to believe that the lower 500 ft. of oil sand would have changed the picture. In addition to being so tight that the well could only produce a limited amount of oil, the sand appears incapable of maintaining even a small sustained production for any length of time. It is quite possible, however, that this lower sand in other parts of the field may be a trifle more porous but this remains to be seen. All deep drilling to date has been restricted to a very small area.

COASTAL DISTRICT COMPLETIONS

Rincon, Ventura County: C. C. M. Oil Co. 3-C Hobson, 17-3n-24w, flowed 146 bbl., 25.1-gravity, 15 per cent cut, 64/64-in. to 24/64-in. beans, T.D. 10,075 ft., perf. 9,027-74 ft., originally drilled to 10,515 ft., stuck drill pipe, plugged to 9,080 ft., and redrilled to 10,075 ft.

Richfield 9-A Hobson fee, 17-3n-24w, flowed 75 bbl., 27-gravity, 5 per cent cut, 20/64-in., pressures 300/450 lb., T.D. 3,800 ft., perf. 3,395-3,584 ft., 3,671-3,721 ft., 3,741-3,800 ft., completed in Hobson zone of Pliocene age.

Santa Maria Valley, Santa Barbara County: George F. Getty 5 Vicente, 27-10n-34w, pumped 452 bbl., 15.5-gravity, 2 per cent cut, T.D. 4,616 ft., perf.

4,243-2,614 ft., completed in Santa Maria Valley zone of Miocene age.

Good Results Obtained in Recompletion of Dominguez Wells

Union Oil Co. successfully recompleted the first of several wells killed last October by an earthquake in the Dominguez field and secured large production. This recompletion was 80 Callender in which the casing and tubing was pinched off slightly below 4,500 ft. The company made a cut at 4,000 ft. and redrilled from this point to 7,414 ft. and returned the well to production flowing 720 bbl. of relatively clean 26.4-gravity oil per day. Union is redrilling three other wells that were killed by the October earthquake and should recomplete 72 Callender within the next 10 days if everything goes all right. R. E. Havenstrite, who lost four producing wells during the earthquake, is having considerable trouble recompleting his 4 Larronde. This well has been redrilled to 7,190 ft. but 1,673 ft. of 5½-in. liner froze at 6,201 ft. and no progress can be made until this liner is recovered.

LOS ANGELES BASIN COMPLETIONS

Coyote East, Orange County: Bartholomae Oil Corp. 11 Stern, 22-3s-10w, pumped 528 bbl., 26.4-gravity, 3 per cent cut, T.D. 6,887 ft., perf. 5,630-6,882 ft., completed in Stern zone.

Dominguez, Los Angeles County: Union 80 Callender, 29-3s-13w, flowed 720 bbl., 29.3-gravity, 1 per cent cut, 500,000 cu. ft. gas, 28/64-in. bean, pressures 250/350 lb., T.D. 7,414 ft., perf. 7,198-7,413 ft., and gun perf. 419 shots 6,875-7,091 ft., damaged by earthquake which necessitated redrilling from 4,150 ft.

Huntington Beach, Orange County: H. C. Morton 5-A Brooks, 34-5s-11w, pumped 92 bbl., 21.1-gravity, 2 per cent cut, T.D. 3,844 ft., perf. 3,743-3,844 ft., completed in town lot zone of Pliocene age.

West American Oil Co. 9 Ashton, 34-5s-11w, pumped 129 bbl., 26.1-gravity, 2 per cent cut, T.D. 4,553 ft., perf. 4,210-40 ft., 4,327-57 ft., 4,373-78 ft., completed in Ashton zone of Pliocene age.

Inglewood, Los Angeles County: Texas Co. 8 Smith, 7-2s-14w, flowed 798 bbl., 33.7-gravity, 0.5 per cent cut, 600,000 cu. ft. gas, 48/64 to 8/64-in. beans, pressures 1,500/1,700 lb., T.D. 8,300 ft., perf. 7,905-8,298 ft., originally drilled to 8,412 ft. and went to water, P.B. and redrilled to Sentous zone of Miocene age.

Torrance, Los Angeles County: L. A. Basin Pet. Co. 3 Phillips, 30-4s-13w, flowed 100 bbl., 18.1-gravity, 3 per cent cut, 22/64-in. bean, pressures 50/125 lb., T.D. 3,743 ft., perf. 3,150-3,743 ft., completed in equivalent of Ranger zone of Miocene age.

Wilmington, Los Angeles County: St. Anthony Oil Corp. 1 McComb, 29-4s-13w, pumped 209 bbl., 16.7-gravity, 7 per cent cut, T.D. 3,710 ft., 100-mesh perf. 3,068-3,326 ft., 80-mesh perf. 3,435-3,709 ft., completed in Ranger zone.

Union Pacific R. R. Co. 210 fee, 3-5s-13w, flowed 2,124 bbl., 23.9-gravity, 0.1 per cent cut, 100,000 cu. ft. gas, 32/64-in. bean, pressures 150/500 lb., T.D. 2,715 ft., 60-mesh perf. 2,417-19 ft., 2,439-96 ft., 2,516-2,715 ft., completed in Ranger zone.

Pressure Control at Schuler

(Continuing from Page 61)

been brought down to normal, with the exception of the experimenting done on the high-ratio wells.

The project is being carried out on a unitized basis and is one of the most orderly and accurate projects ever started. Much experience was profitably utilized by the operators in the field from the several other unitized repressuring and recycling projects put into effect during the past 2 or 3 years. Regular daily reports have been kept on every phase of the field's operation since the repressuring plan was put into effect, and records have been compiled showing the previous history of the field prior to the repressuring.

The entire field is repressured by five input wells on the top of the anticlinal structure, and so far no apparent increase in gas-oil ratio has been noticed even in wells offsetting the input wells. The gas is apparently remaining in the top of the structure in the form of stored gas. A complete discussion of the repressuring plan with production records, pressure charts and other statistics will be made available in an article of future writing.

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Reagan County Ellenburger Pool Extended by Good Well

By TOM BARBER

MIDLAND, Tex.—The second and largest producer as well as a ¾-mile-southwest extension for the Barnhart pool of southeastern Reagan County was recorded this week with the completion of Amerada 1-RB University, Section 8, Block 48, University Lands Survey. Oil production in the pool is derived from the Ellenburger lime section of the lower Ordovician.

No. 1-RB University developed flow early in the week after the second running of the swab after it had been shut in for 5 hours. During the shut-in period, operator had reperforated 5½-in. casing from 9,106-12 ft. and from 9,112-22 ft. Casing had been perforated previously from 9,112-32 ft. after plug had been drilled out to 9,173 ft., total depth.

The outpost swabbed and flowed 62 bbl. of oil through casing in 14 hours after which it was treated with 5,000 gal. of acid. Following the acid treatment, 1-RB University cleaned itself into pits in 2 hours, recovering oil load and acid water. When turned to storage, the well flowed 53.7 bbl. of oil in 30 minutes, through 48/64-in. choke on tubing.

On official gage, the new producer flowed 520.06 bbl. of 45.1-gravity oil in 7 hours. This rate of flow gives the well a daily potential of 1,783 bbl. Flow was through ½-in. choke on 2-in. tubing. Gas-oil ratio was 2,187:1. The producing formation is the Ellenburger lime, topped at 9,000 ft.

The discovery well in the Barnhart pool is Amerada 1-RA University, ¾ mile north and ¼ mile east, which was completed in September 1941 for an estimated daily potential of 1,122 bbl. No. 1-RB University ran approximately 140 ft. low structurally to the discovery well. No. 1-RA University topped the Ellenburger lime at 8,960 ft., drilled to 9,294 ft. and was plugged back to find production at 9,010-82 ft.

The Barnhart pool is 7½ miles southeast of Big Lake and 18 miles east and 5 miles south of the Big Lake field, which was the first West Texas area to open Ordovician production (December 1928).

At the present time, Amerada is drilling below 2,760 ft. at 1-RD University, 1½ miles east and ¼ mile south of the pool opener. No. 1-RD University is in the C NW SW Section 1, Block 48, University Lands Survey.

Crockett County Producer Gaged

Final completion has been recorded by Humble 1 J. W. Owens, Section 8, Block GG, H.E.&W.T. Survey, which either extends the recently opened Couch pool 1½ miles northwest or opens a new oil-producing area for western Crockett County. Bottomed at 2,003 ft., where it was acidized with 1,000 gal. and again with 3,000 gal., the well rated a daily potential of 108 bbl. of oil, plus 1 per cent water, pumping, on official gage. Oil show was encountered at 1,882 ft., with an increase from 1,904-09 ft. and from 1,918-24 ft.

Wildcat Drilling in Culberson County

A wildcat test is being drilled by J. O. Barfield on the 15,255-acre Culberson County ranch which he purchased about a year ago. The wildcat is located in the SE NE Section 20, Block 80, P.S.L. Survey, 16 miles east and slightly north of Van Horn. Operator plans to investigate oil sands around 600-1,300 ft., which showed some promise in a wildcat failure, drilled in 1927, ¼ mile to the east.

SOUTHERN WEST TEXAS COMPLETIONS
(24-hr. rating based on last 3 hr. of 6-hr. gage)

Wildcats

Crockett County: Humble 1 Owens, elev. 2,501 ft., 109 bbl., pumping, top Yates sand 975 ft., acid 1,907-2,003 ft.

Fields

Estes, Ward County: Gulf 165 Hutchins, elev. 2,676 ft., 635 bbl., shot 2,655-2,775 ft., T.D. 2,778 ft.

Foster, Ector County: Sinclair 1-E Johnson, elev. 2,994 ft., 992 bbl., shot 4,087-4,137 ft.

Keystone (Colby sand), Winkler County: Ralph Lowe 5 Zachary estate, elev. 2,883 ft., 203 bbl., shot 3,140-3,241 ft.

McElroy, Upton County: Gulf 260 McElroy, elev. 2,610 ft., 200 bbl. oil and 16 per cent water, shot 2,945-3,147 ft., T.D. 3,257 ft.

North Ward, Ward County: Gulf 196 O'Brien, elev. 2,680 ft., 135 bbl., shot 2,615-2,729 ft., T.D. 2,733 ft.

Spencer, Ward County: Stanolind 2 Mollie Spencer, elev. 2,638 ft., 86 bbl., acid 2,920-33 ft.

Taylor Link, Pecos County: J. L. Cooper 1 University, elev. 3,032 ft., 86 bbl., shot 2,121-45 ft., T.D. 2,147 ft.

White & Baker, Pecos County: W. H. Burleson 2-A White & Baker, elev. 2,868 ft., 226 bbl. oil and 14 bbl. water, shot 1,885-1,915 ft., T.D. 1,923 ft.

NORTHERN WEST TEXAS

A third producing horizon for the Wasson field of northwestern Gaines County was uncovered this week with the completion of Amon G. Carter 4-D Wasson. A north offset to Carter 5-D Wasson, discovery well of the Wasson Deep pool, 4-D Wasson flowed 510.6 bbl. of 34-gravity oil in 24 hours, with gas-oil ratio of 900:1.

Official gage followed a 6,000-gal. acid treatment of a section of the Clear Fork lime through gun-perforated 5½-in. casing from 7,055-7,375 ft. Operator drilled to 11,108 ft. in granite, set casing at 10,615 ft. and plugged back to 7,433 ft.

The area will be called the "Wasson 72" pool, the name being derived from the depth of production. Other wells in the pool are producing from the Permian around 6,200-6,800 ft. No. 4-D Wasson is located 2,200 ft. from the south and east lines of Section 50, Block AX, P.S.L. Survey, in the southern part of the field.

Hockley County Wildcat Will Test Clear Fork Section

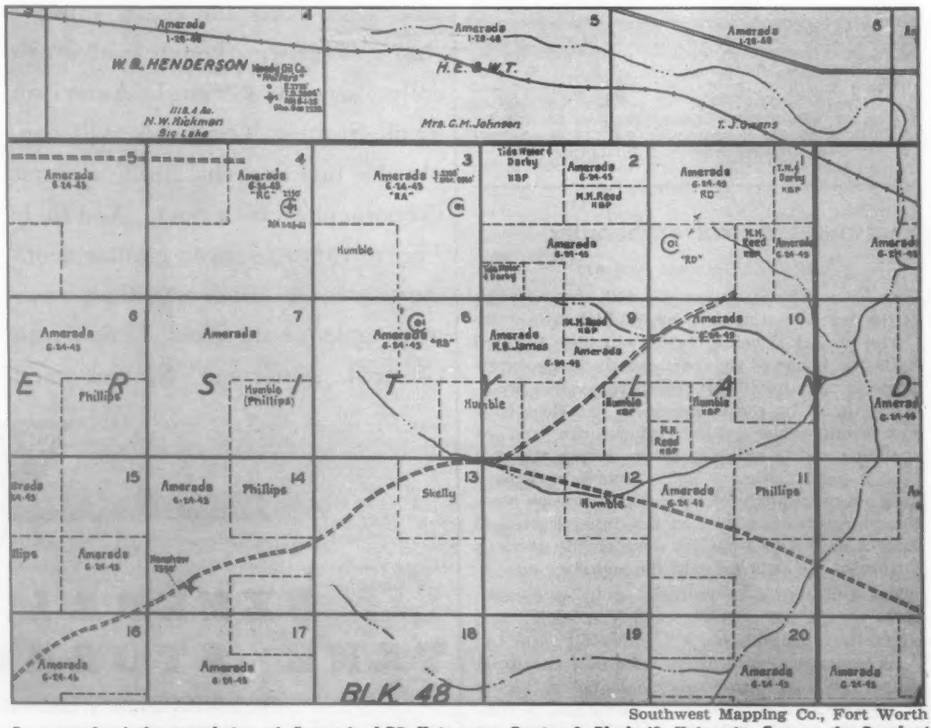
In northern Hockley County, 9 miles north of Levelland, Stanolind Oil & Gas Co. has announced plans for deepening 1 Williams, Labor 21, League 717, State Capitol Land Survey. The wildcat test will be drilled to the Clear Fork section of the Permian lime. At the present time, 1 Williams is drilling below 5,055 ft. in lime. No shows have been reported in drilling to this depth, although the test did encounter a soft section in the lime at 4,724 ft.

Drilling Program Outlined for Cochran County Discovery Area

A development program for the Cochran County area opened by O'Neal Drilling Co. 1 Wright, Labor 12, League 60, Martin C.S.L. Survey, north of the Duggan-Slaughter area, has been outlined by the Bieg Oil Co., while Joe Humphrey is reported to have taken 446 acres in League 58, Martin C.S.L. Survey, and plans to drill an outpost in the near future.

Bieg Oil Co. has marked location for three tests in Labor 12 and two tests in Labor 18 in the Martin Survey. At the present time, Bieg is drilling at 2 Wright, south of the discovery well, and a wildcat west of the area is preparing to get under way. No. 2 Wright, Labor 12, League 60, Martin

(Continued on Page 74)



Southwest Mapping Co., Fort Worth

As a result of the completion of Amerada 1-RB University, Section 8, Block 48, University Survey, the Barnhart pool of southwestern Reagan County received a ¾-mile southwest extension and its largest producer. No. 1-RB University was completed in the Ellenburger lime, topped at 9,000 ft., for an estimated daily potential of 1,783 bbl. of 45.1-gravity oil

SOUTHWEST TEXAS

Second Major Extension of Year Found in McAllen

By F. L. SINGLETON

CORPUS CHRISTI, Tex. — Another major extension was apparently assured the McAllen gas-distillate field last week as W. R. Davis, Inc., prepared to test 1 Jackson, 2 miles north of the field. While the well has been drilled tight and little information was available, 5½-in. casing was reported to have been cemented on bottom at 7,800 ft., preparatory to testing sand at 7,700-7,800 ft. If completed for a producer it will make the fourth producer for the structure and will be the second major extension to the field this year. The field was extended 1 mile southwest earlier in the year by 1 Arizona-Texas Citrus Co., completed at 7,610-30 ft. Due to the success of flank drilling around several gas-distillate structures, this particular area is being watched with wide interest.

In line with this play, several tests were recently started around other such structures. In the Lopeno area, W. L. Pickins is drilling below 3,000 ft. in 1 Ramirez, 1 mile south of gas production, while northeast, and southwest of the La Reforma field, drilling was recently started by Rowan & Hope and Magnolia Petroleum Co. Crude-oil production was recently opened on the northeast side of the La Reforma field, while no commercial oil production has been developed at the Lopeno field.

Wilcox Play Continues

Operators interested in Wilcox development centered their attention on Tom Slick, Jr., 1 J. T. Grissom, 1 mile south of the Caesar field, Bee County, which is coring shale and sandy shale below 6,585 ft., after logging sand showing gas in what was believed to be the Carrizo sand. The sand section was topped at 6,523 ft., and was cored to a total depth of 6.555 ft.

In the same county, in the West Tuleta field. Dirks Brothers et al 1 Harris, flowed 80 bbl. of water-white distillate and 2,480,000 cu. ft. of gas daily through a ¼-in. choke. Tubing pressure was 2,675 lb. The well is testing through perforated casing opposite the Carrizo sand at 7,505-16 ft.

In the Alice field, Southern Minerals Corp. 2 Stilwell, Spring Creek Irrigation Co. Survey, is drilling in shale below 7,767 ft. This is the deepest test drilled in the field and the following markers were released during the week: Textularia Dibollensis 6,669-92 ft., Siphonina and Glandolina 6,806 ft., Nonionella Cockfieldensis 6,851-73 ft., first true Discorbis Yeguaensis 7,180-7,202 ft., Eponides 7,290-7,312 ft., and the Eponides Yeguaensis is at 7,406-46 ft.

Wildcats Continue Successful

Wildcatting throughout the county continued to increase. The latest wildcat activity was reported for the southeast flank of the Orange Grove where Kilgore Developers were preparing to spud 1 Schmidt located in the Casa Blanca grant, 2 miles southeast of the town of Orange Grove where location was made by Plymouth Oil Co. for 1 J. J. Kuck. . . . Trinity Gas Corp. 1 Barrera, which loomed as a dry hole for the Sejita field, Duval County, was being completed as a gas-distillate producer after plugging back from 6,085 ft. and redrilling to a total depth of 5,900 ft. Casing was perforated at 5,640-60 ft. . . . Additional acreage was added to the east side of the Ben Bolt field, Jim Wells County, following the completion of Tom Graham 1 J. P. Blake, approximately ½ mile from production. The well flowed 165 bbl. daily on a 7/64-in. choke while testing sand at 4,845-54 ft. . . . George Greer 1 This, 4 miles west of the Luby field, was drilling in shale below 5,800 ft., and was reported running higher than Brown & Wheeler 1 Booth, a dry hole about ½ mile to the southwest.

Chittim Anticline Opened

The first commercial production was believed to have been opened on the Chittim anticline, Maverick County, as Wellington Oil Co. 2 Chittim flowed 20 bbl. of pipe-line oil in 1 hour through a ⅜-in. choke when tested through perforated casing in the Georgetown lime at 2,966-3,030 ft. Tubing pressure was 460 lb., and casing pressure 655 lb. At the end of the test, the well sanded up, and the hole was being swabbed. The well is located in the I.&G.N. Survey, Section 129, Block 7. Development of this structure dates back to 1929 when Rycade 1 Chittim flowed gas and some high-gravity distillate from the Glen Rose at 5,600 ft. Small production was later developed in the Buda lime at below 3,000 ft., but this was short lived and development in the area thus far has been disappointing. The present well is located east of previous development and a continuation of drilling is anticipated.

LOWER GULF COAST DISTRICT

(Reported week ending December 20)

Fields

Agua Dulce, Nueces County: Ginther, Warren et al 1 Harper, 81 bbl., perf., 5,612-22 ft., T.D. 5,750 ft.
Clara Driscoll, Nueces County: Texas Conservative 3 Taylor, 102 bbl., perf. 5,414-20 ft., T.D. 5,431 ft.
Fagan, Refugio County: Simmons, Rutherford et al 8 Fagan, 126 bbl., perf. 5,645-50 ft., T.D. 5,684 ft.
Haldeman, Jim Wells County: Magnolia 2 Seeligson, dry, T.D. 6,504 ft.
La Gloria, Brooks County: La Gloria Operators 2 South La Gloria unit, 247 bbl. distillate open flow, perf. 5,850-6,030 ft., T.D. 6,900 ft.
Midway, San Patricio County: William F. Morgan 4 Schmidt, 75 bbl. oil and 150 bbl. salt water, perf. 5,351-52½ ft., T.D. 6,577 ft.
Minnie Bock, Nueces County: Clark & Cox 3 Robertson, 34 bbl., perf. 3,794-97 ft., T.D. 3,817 ft.
North Keeran, Victoria County: Barnsdall 2-A Keeran, 13,000,000 cu. ft. gas, perf. 5,280-86 ft., T.D. 7,115 ft.
North McFaddin, Victoria County: Texas Gulf 2 Kester, 10,000,000 cu. ft. gas, perf. 5,092-95 ft., T.D. 5,902 ft.
Odem, San Patricio County: Seaboard 3 Smith, 169 bbl., perf. 5,326-29 ft., T.D. 5,440 ft.
Orange Grove, Jim Wells County: Cities Service 5 Schuenmann, 128 bbl. oil and 32 bbl. salt water, perf. 5,086-89 ft., T.D. 5,090 ft.
H. R. Smith 1 Mueller, 20 bbl. distillate, perf. 3,286-3,303 ft., T.D. 5,100 ft.
Plymouth, San Patricio County: Plymouth 121-C Welder, 144 bbl., perf. 6,142-27 ft., T.D. 6,147 ft.
Seeligson, Jim Wells County: Magnolia 24 Seeligson, 169 bbl., perf. 6,082-84 ft., T.D. 6,160 ft.
Stratton, Jim Wells County: Chicago Corp. 23 Wardner, completed as input well, T.D. 6,701 ft.
Humble 4 King Ranch, 128 bbl., T.D. 6,613 ft.

LAREDO DISTRICT

(Reported week ending December 20)

Fields

Colorado, Jim Hogg County: Andrade 7-A Trevino, 178 bbl., sand 2,854-65 ft.
Humble 48-B King, 49 bbl., T.D. 2,828 ft.
Hoffman, Duval County: Cox & Hamon 3 Gonzales, 55 bbl., pumping, sand 2,712-17 ft.
Kreis, Duval County: W. C. McBride 1 Fite, dry, T.D. 3,291 ft.
Lopeno, Zapata County: William Wind 1 Ramirez 17,000,000 cu. ft. gas, perf. 2,531-52 ft., T.D. 2,573 ft.
Nichols, Hidalgo County: Royal 2 Yturria, 72 bbl., perf. 3,874-76 ft., T.D. 3,948 ft.
Oakville, Live Oak County: Henderson Coquat 1 Mahoney, 50 bbl., perf. 2,758-66 ft., T.D. 2,767 ft.
Piedra De Lumbre, Duval County: Magnolia 37 Duval County Ranch Co., 110 bbl., pumping, perf. 2,127-38 ft., T.D. 2,130 ft.
Texas 23 Duval County Ranch Co., 58 bbl. fluid, 48 per cent salt water, pumping, T.D. 1,998 ft.
Rincon, Starr County: Continental 112-B Slick, 179 bbl., T.D. 4,180 ft.
South Campana, McMullen County: Argo 3-I Edrington, 1,500,000 cu. ft. gas, perf. 2,559-61 ft., T.D. 2,568 ft.
South White Creek, Live Oak County: Stelzig & Clark 1 Turner, junked, T.D. 1,864 ft.
Sweden, Duval County: Hiawatha Oil & Gas Co. 12 Miller, dry, T. D. 6,011 ft.
West Kelsey, Jim Hogg County: Sun 1 Jones, 12,000,000 cu. ft. gas, spray of oil, perf. 4,230-35 ft., T.D. 6,609 ft.

SOUTH CENTRAL TEXAS

(Reported week ending December 20)

Fields

Elgin, Bastrop County: Marts & Beaven 1 Elgin Standard Brick Works, dry, T.D. 3,636 ft.
La Coste, Bexar County: Pegg Brothers 1 San Antonio Irrig. Farm, 400,000 cu. ft. gas, sand 1,130-96 ft.
Luling, Caldwell County: Danish American Oil Co. 10 Cosey, 6 bbl., pumping, T.D. 2,167 ft.
Minerva-Rockdale, Milam County: H. H. Coffield 1 E. Crump, 2 bbl., pumping, top sand 1,340 ft., T.D. 1,370 ft.

Present Activity in Mississippi Confined to Two Pools

(Continued from Page 62)

of which is probably somewhere in Sharkey or Yazoo County in Mississippi. The Cary field discovery well found igneous rock at its total depth as have all other deep tests in this portion of Mississippi. On the extreme east side of the accompanying cross-section is the 9,009-ft. failure in Leake County. It was quit at a subsea depth of 8,600 ft. and still in the Glen Rose formation of the Trinity series. To what depth the Trinity series extends at this point and how far westward the sequence remains correlatable, is not known. Somewhere between Leake County and Sharkey County is probably a Trinity shore line against the eastern extremity of the Monroe igneous uplift.

The Paleozoic section throughout Sharkey and Yazoo counties is not a simple one. Erosional pinnacles existed above the general elevation of the land mass in Paleozoic time. The Cretaceous deposits first filled up the valleys and lows between the pinnacles then leveled out in regional deposits over the entire area.

For this reason geophysical pictures that showed structural highs when shot, have in the past few years been found to indicate only a buried hill below the Cretaceous deposits. There is some chance that strata deposited around these buried hills will form a reservoir somewhat like a salt-dome accumulation, or that a slight structure may reflect them.

Whether deeper drilling into the basement rocks under Tinsley will find igneous rocks or the Trinity sand series of the lower Cretaceous, it is not yet known.

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Texas Gulf Coast Fields

(Continued from Page 63)

in the Frio formation, and sand with a show of oil is reported to have been cored at intervals from 9,029-53 ft. Other showings were said to have been logged at 8,200 ft. and 8,700 ft.

Fig Ridge Extended

The Fig Ridge field, Chambers County, was extended to the southwest with the completion of Sun 1 McCarthy, which flowed 600 bbl. daily through a ¼-in. choke from perforated casing at 8,515-29 ft. The rig is being moved in for 1-A Alcorn. In the meantime, Texas Co. was preparing to complete 4 Broussard after sand was cored at 8,460-8,560 ft.

NORTH LOUISIANA, ARKANSAS

Pettit Lime Pay at Haynesville Is Extended to North

By R. MARNE SANFORD

SHREVEPORT, La.—An approximate 1½-mile north extension has been given the new deep Pettit lime producing level in the Haynesville field of Claiborne Parish in northern Louisiana. The horizon was discovered and opened to production in November of this year by T. L. James 1 Aiken, NW SE 27-23-8, which was completed for 288 bbl. daily from perforation opposite the Pettit lime zone from 5,431-40 ft.

The new producer and north extension was Ohio Oil 1 G. W. Taylor Acct. 15, Section 15-23-8. This test was an old 11,000-ft. failure recently reworked in the new horizon. It came in last week making an estimated 700 bbl. daily through ⅛-in. choke under pressure of 670 lb. on tubing and 450 lb. on casing. The well was perforated from 5,218-30 ft. and acidized with 3,000 gal. The difference in surface elevation and a little variance in the zone of production in the Pettit lime accounts for the almost 200 ft. difference in depth of the producing zone in the two wells.

With these two wells now both on production considerable drilling and reworking for deepening of old tests is expected. At two other points in the field shows of oil have been found in the Pettit lime but not to the extent of yielding two producing wells.

Shallow Show in De Soto Parish

The possible opening of a shallow oil area in the Mansfield Benson sector of De Soto Parish was seen as shows of oil were to be tested. The wildcat is A. E. Roscoe et al 1 McGill, Section 1-10n-13w, which logged 25 ft. of saturated sand lime breaks in chalk and Wolfe City zones. The chalk was topped at 1,880 ft. and carried to 1,903 ft. where the Wolfe City zone came in and was carried to 1,914 ft., total depth. No preliminary tests were made since the well was shut down until after the holiday season. It is on a 1,300-acre block and near an old failure which showed some oil when drilled about 20 years ago.

235,181-Acre Lease Filed

H. L. Hunt, Dallas, Tex., and his Placid Oil Co., both of which have been taking the lead in the Wilcox development and exploration in the Central Louisiana area, have filed a single lease in the county court at Winnfield covering a total of 235,181 acres of land in La Salle, Catahoula, Grant, Winn and Natchitoches parishes, all secured from the Goodpine Lumber & Oil Co. It is the largest oil and gas lease ever filed in the court house and probably one of the largest ever filed anywhere. The lease is divided into three sections, designated as A, B, and C areas. Area A consists of 131,669 acres in Catahoula and La Salle parishes with mineral rights restricted to the base of the Wilcox section. Area B consists of 33,120 acres in Grant Parish and 10,990 acres in southern Winn Parish. Area C covers 40,467 acres in northwestern Winn Parish and 18,935 acres in northwestern Natchitoches Parish.

Arkansas Test Sets Pipe After Getting Show

Barnsdall Oil Co. has set production string at its 1 Bond, closely watched Smackover lime wildcat in Lafayette County and about in the Midway community north of Lewisville. The well has been drilled as a tight operation. Casing was cemented in the top of the Smackover at 6,300 ft. Bottom of saturation is reported at 6,515 ft. The well will be tested during the latter part of the week. Leasing and royalty buying has been strong in the area for the past week and embracing an area radiating some 5 miles in all directions from the well.

Schuler Project Enlarges

Put into effect early this past summer in the Schuler field was a unitized repressuring project for the Jones sand level and according to recent releases from operating companies and from the Arkansas Oil and Gas Commission the project will be expanded to include the upper or Morgan sand of the field. The expansion is expected to add greatly to the some 7,000,000 bbl. additional already made recoverable from the producing zones. All operators of wells in the Morgan sand have agreed to the enlarged project and 84 per cent of the royalty owners have been signed.

New Wildcats Start In East Texas Border

Both Cass and Panola counties are in line for new wildcat tests. The Panola project will be Union Producing Co. 1-C T. C. Adams, in the B. C. Jordan Survey in the Bethany area which produces gas. It will seek gas production from the Glen Rose lime.

In Cass County John Messenger and R. J. Whalen have blocked about 2,000 acres around the John Watson and Joseph Watkins surveys and propose a deep wildcat test. Phillips Petroleum Co. and Texas Co. are reported to have already contributed toward the test.

LOUISIANA GULF COAST

Three Delta District Pools Enlarged by New Wells

By F. L. SINGLETON

NEW ORLEANS, La. — The potentialities of several fields opened in the Louisiana Gulf Coast district during the year were being enlarged last week as additional producers were added and new sands were opened. Outstanding developments were:

1. Delta Duck Club field, Plaquemines Parish, Texas 1 Delta Duck Club opened a new and deeper sand extending production several hundred feet. It flowed at the rate of 457 bbl. of 45-gravity oil daily through a 5/32-in. choke. Tubing pressure was 3,900 lb. Total depth of the well is 11,136 ft., and production is from sand at 11,091-11,134 ft. This is several hundred feet deeper than the discovery well, completed in April of this year through perforated casing at 10,750-10,802 ft.

2. Delacroix Island field, Plaquemines Parish, Texas Co. made a successful cement job in 2 State Delacroix Island, and the well flowed 497 bbl. of oil daily through a $\frac{7}{16}$-in. choke after reperforating casing at 8,955-70 ft. Tubing pressure was 1,600 lb. This well is located in 3-15s-14e about ½ mile from the discovery well, which was completed as a dry-gas well at 8,915-35 ft.

3. Bastian Bay, in Plaquemines Parish, Phillips Petroleum Co. was preparing to test 2 State. Total depth of the well was 9,900 ft., and tubing was being run after perforating casing at 9,350-64 ft. Side-wall cores recovered shaly sand with an oil odor at 9,365 ft., 9,356 ft., and 9,345 ft. Seven and five-eighths inch casing was cemented at 9,896 ft.

4. Unknown Pass field, Orleans Parish, W. T. Burton 7 State, 18-11s-15e, was flowing at the rate of 42 bbl. of net distillate, plus 75 per cent salt water daily through a ¼-in. choke. Tubing pressure was 1,400 lb. This well was drilled to a total depth of 10,273 ft., and was plugged back and completed in the discovery pay through perforated casing at 9,181-97 ft. From development thus far, this appears to be a second-rate discovery, although further development may be more favorable.

5. Lapeyrouse area, Terrebonne Parish, Gulf 1 Eachete, 67-20s-18e, was drilling sand and shells below 10,627 ft. An electrical survey from 9,992-10,602 ft. failed to log any shows of oil or gas. The well is located northeast of the discovery well which was completed as a gas-distillate producer through perforated casing at 10,942-46 ft.

Deep Wilcox Well at Neale

What may prove to be the deepest Wilcox sand producer in the Gulf Coast is Atlantic 1 Hawkins Unit, located in the Neale field, Beauregard Parish. With the hole bottomed at 12,584 ft., 5½-in. casing was cemented at 12,584 ft., preparatory to testing through perforated casing at 12,493-12,533 ft. The well is located in 27-3s-11w, west and southeast of previous deep Wilcox development where two wells have been completed in the lower Wilcox at intervals from 10,880-11,028 ft. Whether these two sands were logged in the present well was not announced. The opening of this deep sand has been one of the most important developments along the Wilcox trend during the year.

Other New Wells

On the southwest flank of the Vinton field, Calcasieu Parish, Union Sulphur Co. was preparing to test 3 Gray, 400 ft. northwest of a recent extension, after sand showing oil was logged in a sidetracked hole, bottomed at 4,001 ft. . . . In Cameron Parish, ¾ mile northeast of the discovery well of the Little Chenier field, Phillips 2 Miami Corp., 12-14s-6w, was shut in after gaging 18 bbl. of 53-gravity distillate in 18 hours, flowing through a 10/64-in. choke. . . . In the Thornwell area, Jefferson Davis Parish, Cities Service 1 Lacassine, 36-11s-5w, continued to log showings of gas, but was drilling ahead in shale below 10,101 ft. Along this same trend, about 3 miles northeast of the discovery well of the Lewisberg field,

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KANSAS, NEBRASKA

Two New Pools Are Showing In Southwestern Kansas

By ROBERT INGRAM

WELL to the southwest of the main Kansas development along the Barton arch, Stanolind Oil & Gas Co. last week had good prospects for opening a new oil pool at 1 Rosine Smith, N½ SE SE 16-23-16w. Fair saturation and good porosity was reported in a core taken from Arbuckle dolomite at 4,105-10 ft. and formation tops were reported checking high in comparison with other tests drilled in the vicinity. Nearest production is at the Macksville pool of Stafford County, 7 miles south and east. The entire region, running from the Zenith area west through the group of Stafford County pools, is being explored and developed by Stanolind.

Still farther west in Kearny County, where Stanolind is also active, there were reports that the third of the company's wells in the new Patterson pool had drilled past the level at which the producing Patterson sand had been expected and was shut down for orders at 4,945 ft. with 500 ft. of water in the hole. The well was Stanolind 1 Niblock, E½ NE NE 26-22-38w, a south offset to the discovery well.

At the eastern extreme of this southern region, along the Zenith-Peace Creek Viola lime trend, Central Petroleum Co. 1 Schweizer, SE NW 31-22-9w, had shows of oil in the Viola which might result in the fifth new pool on the trend. Good odor, fair saturation and good porosity showed in drill cuttings from 3,720-24 ft. in the Viola lime, and casing was set at 3,719 ft. The well was drilled to a total depth of 3,724 ft.

This latest indicated extension of the trend lies northeast of the Hendrickson pool, opened last month, and the Peace Creek, Northeast Peace Creek and Zenith pools.

Dickinson County Discovery

A new oil pool for Dickinson County was indicated last week 7 miles north of the Lost Springs pool of Marion County. C. C. Nelson and Nelson Drilling Co. 1 Will, SE NE 8-16-4e, topped the Mississippian chat at 2,212 ft., drilled a showing of oil to 2,220 ft., total depth, and set casing to test.

The wildcat was drilled on a surface structural feature. It is on the west flank of the Nemaha granite ridge.

Raymond Area Wildcat

Possibilities of discovering a new Lansing-Kansas City lime pool 2½ miles south of the Raymond pool, appeared bright. Luther Mackall 1 Beaman, W½ NW NE 33-20-10w, topped the Lansing-Kansas City lime series at 2,983 ft., logged oil showing from 3,062-71 ft., topped Simpson formation at 3,288 ft., topped the Arbuckle dolomite at 3,327 ft., and drilled to 3,345 ft., total depth.

Casing was set and cemented on bottom preparatory to running gun perforator. Casing will be shot from 3,062-71 ft. in the Lansing series.

Trapp Extended South

Potential tests were to be taken on a new ½-mile south extension to the Trapp pool of northern Barton County, in the Lansing-Kansas City lime series. Skelly 1 Susank, NW NE 19-16-13w, pumped 136 bbl. of oil and 5 bbl. of water in 9½ hours, after acidation.

Following the test, operators reacidized, pumped off the acid, and shut in the well while tank battery was being erected. Production is obtained through casing perforations from 3,206-18 ft. and from 3,137-45 ft., in the Lansing series.

Originally, the test was drilled to the pre-Cambrian quartzite and plugged back, after failing to find production in the pre-Lansing formations.

KANSAS COMPLETIONS

(Reported week ending December 20)

Fields

Bitikofer, McPherson County: E. B. Shawver 1 Weaver, S½ NE NW 1-20-1w, 23 bbl., Mississippi 2,888-2,917 ft.

Chase, Rice County: McPherson Drilling 4 Cramm-D, N½ S½ SW 15-19-9w, salt water disposal, T.D. 4,718½ ft.

Coralena-Trapp, Russell County: R. H. Shields 6 Rogg, N¼ NE NW 9-15-13w, potential 353 bbl., Lansing 2,979-91 ft.

Phillips et al 2 Mai, SE SE SW 15-15-14w, potential 431 bbl., Arbuckle 3,331-36 ft.

Cities Service 5 Kosar, W½ E½ SE 5-16-13w, dry, T.D. 3,415 ft.

Cunningham, Pratt County: Parker Drilling 1 Bucklin, N½ NE NE 11-28-11w, 5,920,000 cu. ft. gas, Viola 4,244-69 ft.

Northeast Davidson, Russell County: V. D. Sidney et al 1 Phillip, S½ SW NE 34-15-11w, potential 57 bbl., Gorham 3,310-13 ft.

Doran, Rice County: C. H. Weaver 2 Link, S½ NE SW 18-19-9w, dry, T.D. 3,319 ft.

El Dorado, Butler County: Cities Service 208 Wilson, SW NW SE 8-25-5e, 15 bbl., Kansas City 1,936-2,031 ft.

Greenvale, Russell County: Cities Service 2 Zeman, NE SW NW 3-15-12w, dry, T.D. 3,232 ft.

Hall-Gurney, Russell County: Texas 3 Boxberger-A,

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OKLAHOMA FIELD REPORT

McLish Test Staked at Madill After Success at Cumberland

By ROBERT INGRAM

NEW development was getting under way in extreme southern Oklahoma last week between the Arbuckle Mountains and the Texas border. Exploration was spurred by the recent Stephens County discoveries at West Loco and South Woolsey and has spread east into Love and Marshall counties near the big Cumberland pool opened by Pure Oil Co. in 1940. Older areas, particularly Empire and Velma, have also had a revival of drilling as well as a deepening and workover program for the past several months.

At South Woolsey, most recent discovery in the region, R. W. Fair, Glen Grimes and Tommy C. Vaughn, discoverers of the pool, have staked six locations under various operating companies. Fair, Grimes & Vaughn staked 2 Baker-B, NE NW NE 35-2s-6w; 3 Baker-B, SW NW NE 35-2s-6w, and 4 Baker-B, NW NW NE 35-2s-6w. Fair Operating Co. staked 3-A John Baker-A, a twin, in NW SW NE 35-2s-6w, and 4 John Baker-A, NE SW NE 35-2s-6w. The F.G.V. Oil Co. started 1 Halloway in SE SW SE 26-2s-5w, on the edge of the area.

The pool was opened by 1 Baker-B, which tested for around 100 bbl. an hour from sand at 1,838 ft.

Meantime the Madill anticline, known for years and producing from shallow wells in Township 5s-6e in the Madill pool, was to be tested to the McLish sand. Interest in the new test was heightened by the recent discovery of McLish production at the nearby Cumberland pool which is about 5 miles northeast. Also, late in 1939, Johnson & Kemnitz 1 Neff-Godfrey, 14-6s-6e, found some oil although it failed to open a pool.

The McLish test at Madill is Colbert H. Marshall and Edward J. Kubat 1 Annie McCormick, SE SE 4-6s-6e, scheduled to go to at least 5,000 ft. Supporting the test are Pure Oil Co., Stanolind Oil & Gas Co., Atlantic Refining Co., Ohio Oil Co., Magnolia Petroleum Co., Sinclair Prairie Oil Co. and W. T. Payne and W. O. Allen. A number of other companies own leases in the vicinity and it is reported that very few leases are now available. Like the Cumberland pool, it is in the area which will be inundated by the proposed Denison dam and reservoir.

Pool Allowables Revised

Adjustments in pool allowables, made last week by the Corporation Commission, furnished interesting information on the possibilities of production from pools opened in the past year as well as on many older areas which are declining fast. Removed from proration restrictions was the Dill pool in western Okfuskee County and Seminole County which had a lively drilling campaign last spring along a north extension. The entire pool was making only 2,100 bbl. a day. Also removed from proration was the new South Dill pool which was doing 295 bbl. a day. The South Castle field, also new, produced only 72 bbl. daily in November and was also taken off proration.

In contrast, the East Cromwell pool extension was given an allowable of 5,600 bbl. a day, up 600 bbl. from the previous month; West Hotulke-Second Wilcox was upped from 1,100 bbl. to 1,200 bbl., and the Guthrie field of Logan County was upped 300 bbl. to 3,500 bbl. to care for new wells, most of them in the Bartlesville sand.

A number of other adjustments were made and allowables in most fields were revised to put the quota at near ability to produce. It was indicated that at the January hearing, more older fields would be dropped from proration rating.

In view of these figures, Apache, in Caddo County, still held its place as the outstanding discovery of the year from the standpoint both of new production and from regional information. While exploration continued both north and south from Apache, the pool itself was given an allowable of 4,000 bbl. a day, an increase of 1,450 bbl. from the November allowable which had been cut due to inadequate transportation facilities. The per-well allowable was set at 300 bbl.

Other Developments

Texas Co. cemented off salt water at 1,300-1,400 ft. at 1 Reich, NW NW NE 25-4-11w, a new

wildcat on the Apache trend in Comanche County and was preparing to drill ahead from 1,779 ft. . . . Denver Producing & Refining 1 Luella Hayes, NE NE SW 14-4-11w, also on the Apache trend, was drilling at 3,365 ft. . . . On application of Anderson-Prichard Oil Co. and others, the Corporation Commission extended 10-acre spacing regulations to cover all of Section 15 and N½ 22-12-3w for wells to the upper Hoover sand zone of the Oklahoma City field. Two wells in this zone were testing, five producing.

OKLAHOMA COMPLETIONS

(Reported week ending December 20)

Fields

Apache, Caddo County: Texas 5 Smith, NE SW NW 2-5-12w, flowed 978 bbl. through ⅝-in. choke, potential 5,923 bbl., pay sand 3,372 ft., T.D. 3,490 ft.

North Bebee, Pottawatomie County: Culver & Sheppard 3 State, NW NE NW 16-5-5, pumped 30 bbl., Hunton 2,158-2,406 ft., T.D. 2,430 ft.

Burbank, Osage County: Phillips and Continental 16 Osage, NW NE NE 36-27-5, pumped 24 bbl. oil and 16 bbl. water, pay 2,958 ft., T.D. 3,010 ft.

Cement, Caddo County: Ohio 14 Wagner-Acct. 2, SE NW SW 12-5-9w, swabbed 466 bbl., Wade sand 3,906-84 ft., T.D. 4,021 ft.

Chickasha, Grady County: Sinclair Prairie 7 Charlson, SE SE 22-5-8w, gaged 146,000,000 cu. ft. gas, Charlson 3,860-4,044 ft., T.D. 4,113 ft.

East Cromwell, Okfuskee County: Titus 5 Sands, SW SE SE 26-11-8, pumped 75 bbl. oil and 75 bbl. water, Viola 3,417 ft., T.D. 3,432 ft.

Sunray 2 Miracle, NE NW SE 35-11-8, old well, old T.D. 3,430 ft., T.D. 3,454 ft., pumped 307 bbl., Cromwell.

Shell 2 Tiger-A, NW NE SW 35-11-8, pumped 262 bbl., Cromwell 3,388 ft., T.D. 3,428 ft.

Shell 1 Lehmer-B, SE NW SW 26-11-8, potential 286 bbl., Cromwell 3,452 ft., T.D. 3,492 ft.

Cumberland, Marshall County: Pure 3 Chrisman-104, SW SE SE 20-5s-7e, flowed 57 bbl., sand 4,999 ft., T.D. 5,058 ft.

Guthrie, Logan County: W. C. McBride 6 Eastwood, SW SW SW 7-17-1w, flowed 292 bbl., Bartlesville 5,101-16 ft., T.D. 5,118 ft.

West Hewitt, Carter County: Gibson & Jennings 12 Griffin, SW NE SE 20-4s-2w, pumped 10 bbl., pay 2,921 ft., T.D. 3,098 ft.

Gibson & Jennings 4 Lamb, NW NE NE 29-4s-2w, pumped 30 bbl., pay 2,247 ft., T.D. 2,266 ft.

Walter Neustadt 10 Choate, SW NE SE 18-4s-2w, dry, T.D. 2,405 ft.

Daube 3 Merrick, NE NW SW 20-4s-2w, pumped 198 bbl., pay 2,232 ft., T.D. 2,272 ft.

West Hotulke, Pottawatomie County: Smith 1 Kessinger, NE NW NE 27-9-4, pumped 425 bbl. oil and 240 bbl. water, Viola 4,392-4,420 ft., T.D. 4,634 ft.

Isom Springs, Marshall County: Hewitt Mineral 3-B Adams, NE NW NE 6-8s-6e, pumped 25 bbl., pay 546 ft., T.D. 556 ft.

Oklahoma City, Oklahoma County: Big Chief 1 Hanna, NE SW SW 22-12-3w, pumped 189 bbl., Wilcox 6,407 ft., T.D. 6,526 ft.

Sasakwa, Seminole County: Eason & Grisso 3 Van Buskirk, N½ SE NW 7-6-8, pumped 70 bbl., Calvin 1,116 ft., pay 1,179 ft., T.D. 1,192 ft.

St. Louis, Pottawatomie County: Magnolia 5 Hughbanks, SE NE NW 17-7-4, pumped 270 bbl., dense and dolomite 3,999-4,015 ft.

Tecumseh Lake, Pottawatomie County: Gulf 1 Dixon, SE NW SW 36-10-3, dry, T.D. 5,245 ft., Wilcox 5,230 ft.

East Tecumseh, Pottawatomie County: Delaney-Osborne 1 School, NE SE NW 16-9-5, dry, T.D. 4,265 ft., Wilcox 4,246 ft.

Velma, Stephens County: Skelly 8 Martin, NE SE NW 36-1s-5w, pumped 12 bbl., pay 620 ft., T.D. 735 ft.

Skelly 6 Harmon-A, SE SE NE 27-1s-5w, old well, old T.D. 738 ft., T.D. 920 ft., pumped 41 bbl.

Mudge 7 Broadbent, NE SW NW 1-2s-5w, old well, old T.D. 700 ft., T.D. 837 ft., pumped 3 bbl.

Wetumka, Hughes County: Phillips 1 Replogle, SE NE SW 13-9-10, pumped 90 bbl. oil and 200 bbl. water, Hunton 3,760-3,803 ft., T.D. 3,956 ft.

South Woosley, Stephens County: Grimes 1-B Baker, SE NW NE 35-2s-6w, dry, T.D. 1,906 ft.

Miscellaneous

Creek County: Sinclair 2 Marshall, SW SW SW 31-17-9, old well, dry.

Smith 2 Myers, NW SW NE 1-17-10, dry, T.D. 2,425 ft.

Okmulgee County: Bogle 3 Bean, NW NW NE 14-12-12, gaged 6,250,000 cu. ft. gas, Dutcher 2,231 ft., T.D. 2,245 ft.

Osage County: Mitchell & Notley 13 Osage, NE SW SE 35-27-11, pumped 3 bbl., pay 970 ft., T.D. 1,005 ft.

Jay P. Walker 2 Osage, SW SW SW 13-25-10, pumped 23 bbl., pay 1,431-62 ft.

Finance Oil 28 Osage, SW SE SW 19-23-9, old well, old T.D. 2,177 ft., T.D. 2,542 ft., dry.

Edmondson 4 Osage, SW NW NE 22-21-12, pumped 10 bbl., Bartlesville 1,261 ft., T.D. 1,309 ft.

Pontotoc County: Bishop Oil 1 McCurry, SE NE NW 15-4-6, pumped 14 bbl., sand 819 ft., T.D. 880 ft.

Tulsa County: Midco 2-A Tibleau, NE SW NW 9-21-13, dry, T.D. 1,752 ft., Wilcox 1,724 ft.

Wagner County: C. E. Hall 1 Hopping, NW NW SW 19-17-15, dry, T.D. 1,840 ft.

It's a Fact

Johnston

TODAY, SALT WATER SPELLS POISON TO AN OIL MAN. BUT THE FACT REMAINS THAT SALT WATER GAVE THE OIL INDUSTRY ITS START. ALL THE MACHINERY, TOOLS AND METHODS USED TO DRILL THE FIRST OIL WELLS IN THIS COUNTRY HAD BEEN DEVELOPED AND BUILT—NOT FOR DRILLING OIL WELLS—BUT FOR DRILLING SALT WELLS!

BUT EVEN SALT WATER IS NO LONGER A MAJOR PROBLEM WITH OIL MEN WHO USE THE JOHNSTON FORMATION TESTER. BY USING THIS TOOL, IT'S AS EASY TO DETECT SALT WATER ZONES AS IT IS TO KNOW WHICH ONES ARE DRY AND WHICH WILL PRODUCE OIL OR GAS! THE UNWANTED SANDS CAN THEN BE CASED OFF, AND THE REST OF THE WELL DEVELOPED TO ITS UTMOST POSSIBILITIES. BY RUNNING A JOHNSTON TEST—AS EASY TO DO AS CHANGING A BIT—THE ZONE IS OPENED UP TO UNOBSTRUCTED FLUID PASSAGE AND ALLOWED TO ENTER THE DRILL STRING UNDER ACTUAL PRODUCING CONDITIONS. MOREOVER, THE TOOL TRAPS AND BRINGS TO THE SURFACE AN ACTUAL SAMPLE OF FORMATION FLUID FOR LABORATORY TEST—AN IMPORTANT FEATURE THAT PERMITS CLOSE ANALYSIS OF THE ZONES ENCOUNTERED. THE JOHNSTON TESTER SAVES DEVELOPMENT COSTS . . . ENABLES YOU TO MAKE EACH STRING OF CASING DO THE WORK OF SEVERAL . . . AND PROVIDES ACCURATE INFORMATION THAT RESULTS IN A BETTER WELL!

ARE YOU DEVELOPING EVERY WELL—AND YOUR ENTIRE FIELD—TO ITS UTMOST PRESENT AND FUTURE POSSIBILITIES? FIND OUT HOW EASY IT IS TO INSURE MORE EFFICIENT DEVELOPMENT WITH THE JOHNSTON TESTER TO GUIDE YOU. WRITE FOR ENGINEERING BROCHURE IS—NO OBLIGATION AT ALL.

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FIVE DOLLARS ($5.00) WILL BE PAID FOR EACH INTERESTING OR UNUSUAL FACT CONCERNING THE PETROLEUM INDUSTRY (EITHER IN THE UNITED STATES OR ABROAD) WHICH IS USED IN THIS SERIES OF JOHNSTON ADVERTISEMENTS. SUBSTANTIAL PROOF MUST ACCOMPANY EACH CONTRIBUTION. WHEN TWO OR MORE SIMILAR FACTS ARE SENT IN, THE AWARD WILL BE GIVEN TO THE FIRST ONE RECEIVED . . .

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FORMATION AND CASING TESTING

JOHNSTON Oil Field Service Corp.
5702 NAVIGATION BLVD.
HOUSTON, TEXAS

"WHY SET CASING BEFORE YOU KNOW!"

CANADIAN FIELDS

Canadian Production Runs Well Ahead of Last Year

By VICTOR LAURISTON

CHATHAM, Ont.—Crude and natural-gas production from all Canadian fields for October is reported at 871,491 bbl., compared with 878,782 bbl. in September and 817,596 bbl. in October last year. Of the October 1941 output, 856,191 bbl. came from Alberta, and the remainder from Ontario, New Brunswick, and the Northwest Territories. Some 2,591 bbl. of crude were extracted from the tar sands of northern Alberta.

Canadian production for the first 10 months of 1941 totaled 8,370,968 bbl. compared with 7,086,161 bbl. in the same period of 1940.

Natural gas marketed from all Canadian fields in October totaled 3,009,606,000 cu. ft. compared with 2,446,539,000 cu. ft. in September and 2,543,995,000 cu. ft. in October of last year.

Alberta Crude Output

Crude and natural-gasoline production from Alberta for the week ending December 15 averaged 28,360 bbl. daily compared with 28,139 bbl. daily for the previous week and 23,081 bbl. daily for the corresponding week last year. The daily average included 27,249 bbl. of crude and 814 bbl. of natural gasoline from Turner Valley and 297 bbl. of crude from outside fields. There were 197 producing oil wells, of which 176 were in Turner Valley: 32 drilling 1 finished, 2 new producers, 8 testing, 1 shut down, 3 abandoned, 4 spudded, and 6 drilling licenses issued.

Turner Valley Lime Tests

North Turner Valley: Major Oils 4, LSD 8, 8-21-3w5, deepening after getting the Madison limestone at 7,340 ft. Test proves the lime ½ mi. north of Major 3, most northerly producer, with the formation 315 ft. higher.

Foothills Oil & Gas 10, LSD 2, 4-21-3w5, finished at 6,896 ft., Madison at 6,619 ft., acidizing and testing.

Home Oil 9, LSD 9, 15-20-3w5, T.D. 8,478 ft., Madison at 7,974 ft., acidizing and testing.

Royalite Oil 60, LSD 5, 14-20-3w5, T.D. 8,216 ft., Madison at 7,703 ft., acidizing and testing.

West Central section: Royalite Oil 61, LSD 5, 19-19-2w5, finishing below 7,374 ft., Madison at 7,167 ft.

United-British American 1, LSD 16, 12-19-3w5, T.D. 8,418 ft., Madison at 7,945 ft., initial production over 400 bbl. daily.

Southwest Petroleum 6, LSD 5, 8-19-2w5, T.D. 7,000 ft., Madison at 6,562 ft., acidizing and testing.

Steveville Completion

In the Steveville-Princess field, eastern Alberta, Standard Oil of British Columbia 6, LSD 5, 27-20-12w4, opened a 10-ft. sand above 3,185 ft. The 7-in. casing was run to 3,185 ft. Initial 4-hour test through tubing showed production at a rate of 156 bbl. daily of water-free crude, with gas-oil ratio of 11,000 cu. ft. A 26-hour drill-stem test indicated 102 bbl. hourly with 1,700,000 cu. ft. of gas daily. Production comes from a formation above the lime, and no water was indicated. The location is 3½ miles north of Standard 2 Princess, the crude discovery well and only other crude producer, which averages around 100 bbl. daily after considerable difficulty with water intrusion.

North Noble Pool, Richland County, Extended North

By STAFF CORRESPONDENT

MATTOON, Ill.—There were no new oil pools opened in Illinois last week. This, in view of the remarkable record of discoveries over the past 12 months, was news. It was not, however, any indication that the possibilities of the basin were being drilled up, nor was it an indication that the play had subsided. It just happened that way, even though the holidays and rainy weather were responsible for a number of shutdowns and delays.

Successful wildcats of the week were all pool extenders. Most notable of these was Pure Oil Co. 1 Boley, 28-4n-9e, which flowed approximately 450 bbl. a day from McClosky lime to extend the North Noble field of Richland County ½ mile north.

Meanwhile, ½ mile south of Olney, also in Richland County, Benedum-Trees moved rotary tools of 1 Powell, a wildcat in 10-3n-10e, which had given indications of making a well and from 10 ft. of McClosky pay. It had been announced, however, that there was a considerable showing of water in the drill-stem test and further work would be delayed until after the holidays. The operators would make no comment on the moving of the rig.

East of the Olney city limits, Olson Drilling Co. was down 1,200 ft. in 1 Boyd, a wildcat in 1-3n-10e. Three miles south of Noble, Henry Martin was rigging up 1 Taylor, 33-3n-9e, and Pure set surface pipe in 1 Chapman, a wildcat in 13-4n-9e, a short distance north of a big gas well drilled several years ago.

Two Extensions Likely

Probable pool extensions were showing east of McClosky lime production in the Bone Gap pool, Edwards County, and south of the Calvin pool in White County. East of Bone Gap, Helmerich & Payne 1 Reed, SW NE NW 18-1s-11e, was being completed in the McClosky lime three locations from production. The Calvin pool extender was Washburn & Powers 1 Brown, NE NW SE NW 20-4s-14w, which set casing for a test of Aux Vases saturation topped at 2,945 ft. Total depth was 2,945 ft.

ILLINOIS COMPLETIONS

Wildcats

Clay County: A. H. Gibson et al 1 Harten, S½ SW NW 28-3n-7e, dry at 3,085 ft., base Pennsylvanian 2,020 ft., Menard 2,210 ft., Tar Springs 2,320 ft., Glen Dean 2,436 ft., Hardinsburg 2,470 ft., Golconda 2,511 ft., Cypress sand 2,638 ft., Benoist 2,805 ft., Renault 2,861 ft., Aux Vases 2,878 ft., Ste. Genevieve 2,934 ft., Rosiclare 2,951 ft., Fredonia 2,982 ft.

Coles County: Carter 1 Moore heirs, NW SW SE 2-13n-7e, dry at 1,913 ft., Glen Dean 1,520 ft., Cypress 1,625 ft., Weiler 1,622 ft., Benoist 1,775 ft., Aux Vases 1,832 ft., Ste. Genevieve 1,839 ft.

Franklin County: J. W. Mitchell 1 Van Horn, S½ SE SE 30-6s-1e, dry at 2,830 ft., Menard 1,805 ft., Tar Springs 1,948 ft., Glen Dean 2,042 ft., Golconda 2,163 ft., Barlow 2,261 ft., Cypress sand 2,302 ft., Paint Creek 2,424 ft., Benoist sand 2,532 ft., Renault 2,537 ft., Aux Vases 2,560 ft., Ste. Genevieve 2,631 ft., Rosiclare 2,653 ft., Fredonia 2,767 ft., McClosky 2,774 ft.

Adkins 1 H. Taylor, NE SE SW 25-5s-2e, dry at 2,864 ft., Menard 1,977 ft., Waltersburg 2,047 ft., Vienna 2,101 ft., Tar Springs 2,109 ft., Tar Springs sand 2,150 ft., Glen Dean 2,193 ft., Hardinsburg 2,246 ft., Golconda 2,301 ft., Cypress sand 2,432 ft., Paint Creek 2,539 ft., Paint Creek sand 2,581 ft., Renault 2,673 ft., Aux Vases 2,695 ft., Aux Vases sand 2,724 ft., Ste. Genevieve 2,750 ft., Rosiclare 2,776 ft., Fredonia 2,830 ft., McClosky 2,839 ft.

Jefferson County: A. W. Gerson 1 W. B. Harton, SE SE NW 27-2s-2e, dry at 2,837 ft., Tar Springs sand 2,024 ft., Glen Dean 2,122 ft., Hardinsburg 2,158 ft., Golconda 2,234 ft., Barlow 2,330 ft., Paint Creek 2,503 ft., Benoist 2,512 ft., Benoist sand 2,518 ft., Renault 2,538 ft., Aux Vases sand 2,578 ft., Ste. Genevieve 2,650 ft., Levias 2,650 ft., Rosiclare 2,670 ft., Fredonia 2,740 ft., McClosky 2,745 ft.

Grady & Daniels 1 Threlkeld, N½ NE SW 36-4s-2e, location abandoned.

Jackson County: Solomon et al 1 Valentine heirs, SW SW SW 34-7s-4w, dry at 40 ft.

Lawrence County: DeKalb 2 J. King, SW SW NE 8-2n-12w, dry at 2,320 ft., Glen Dean 1,760 ft., Ste. Genevieve 2,241 ft., McClosky 2,270 ft.

Perry County: E. S. Adkins 1 Pyramid Coal, SW SW NE 10-6s-3w, dry at 1,538 ft., Menard 770 ft., Waltersburg 842 ft., Vienna 908 ft., Tar Springs 912 ft., Glen Dean 960 ft., Golconda 1,068 ft., Barlow 1,185 ft., Cypress 1,209 ft., Paint Creek 1,282 ft., Benoist 1,392 ft., Renault 1,419 ft., Aux Vases sand 1,469 ft., Ste. Genevieve 1,529 ft.

Richland County: W. Duncan 1 W. C. Bierhaus, E½ NW NW 16-2n-14w, dry at 3,206 ft., Waltersburg 2,356 ft., Vienna 2,428 ft., Glen Dean 2,546 ft., Hardinsburg 2,576 ft., Golconda 2,648 ft., Barlow 2,738 ft., Weiler 2,795 ft., Paint Creek 2,828 ft., Benoist 2,898 ft., Benoist sand 2,936 ft., Renault 2,936 ft., Ste. Genevieve 3,089 ft.

Seaboard Oil 1 A. Wetzel, W½ NE SE 13-2n-14w, dry at 3,065 ft., Glen Dean 2,422 ft., Golconda 2,510 ft., Barlow 2,613 ft., Renault 2,827 ft., Ste. Genevieve 2,937 ft., McClosky 2,966 ft., St. Louis 3,052 ft.

Schuyler County: T. K. Degenther 1 Scott, NW NW NW 12-3n-4w, dry at 735 ft., Devonian 427 ft., Maquoketa 439 ft., Trenton 630 ft.

Shelby County: Lakewood Oil 1 Hatten, NE NE NE 13-10n-2e, dry at 1,697 ft., Glen Dean 1,390 ft., Golconda 1,494 ft., Cypress 1,518 ft., Weiler 1,540 ft., Paint Creek 1,635 ft., Benoist 1,665 ft., Renault 1,685 ft., Aux Vases 1,694 ft.

Wabash County: White & Wickwire 1 H. Courter, NW NE SE 21-1n-12w, dry at 100 ft.

Wayne County: N. V. Duncan 1 R. Guthrie, N½ NW SW 35-1n-5e, dry at 3,105 ft., Menard 2,206 ft., Tar Springs 2,323 ft., Glen Dean 2,429 ft., Golconda 2,494 ft., Barlow 2,610 ft., Cypress sand 2,685 ft., Paint Creek 2,805 ft., Benoist 2,859 ft., Renault 2,906 ft., Aux Vases 2,922 ft., Ste. Genevieve 2,973 ft., Rosiclare 3,008 ft., Fredonia 3,093 ft., St. Louis 3,093 ft.

White County: McBride 1 Kaly, trustee, N½ SW SW 7-4s-10e, flowed 1,029 bbl., 6 per cent water, McClosky 3,264-72 ft., T.D. 3,276 ft.

Fields

Allendale, Wabash County: D. Schenooll 1 Mullinax, N½ NW NE NE 16-1n-12w, dry at 200 ft.

Calvin, White County: A. H. Anderson 1 Leathers, SE SW NE 12-4s-10e, pumped 197 bbl., perf. 3,108-15 ft., Ste. Genevieve 3,094 ft., McClosky 3,184 ft., T.D. 3,201 ft.

Clay City, Wayne County: Pure 2 E. Wells, S½ SE NW 31-2n-8e, dry at 3,072 ft., Glen Dean 2,460 ft., Hardinsburg 2,483 ft., Barlow 2,645 ft., Aux Vases sand 2,930 ft., Ste. Genevieve 2,955 ft., Rosiclare 2,970 ft., Fredonia 2,988 ft., McClosky 3,028 ft.

Clay City West, Clay County: Pure 1 R. Stanford, N½ NE SW 10-2n-7e, flowed 1,655 bbl., natural, McClosky 3,059-74 ft., T.D. 3,077 ft.

Pure 1-A L. A. Pierce, S½ SW NE 10-2n-7e, flowed 1,790 bbl., 5,000 gal. acid, McClosky 3,033-51 ft., T.D. 3,065 ft.

Dale, Hamilton County: McBride 1 Pennington Comm., SW SE SE 12-6s-6e, pumped 608 bbl., 50-qt. shot 3,065-88 ft., Aux Vases 3,059 ft., T.D. 3,088 ft.

Dix, Jefferson County: Carter 3 E. Dobbs, SW SE NW 10-1s-2e, pumped 53 bbl., Benoist 1,960 ft., T.D. 1,966 ft.

Inman East, Gallatin County: Oil Management 10 Egyptian Tie & Timber, SE SE SE 16-8s-10e, pumped 44 bbl. oil and 22 bbl. water, 40-qt. shot 2,388-2,417 ft., Cypress sand 2,386 ft., T.D. 2,417 ft.

Irvington, Washington County: Reward et al 3 Maschoff, NW NE SW 10-1s-1w, pumped 32 bbl. oil and 27 bbl. water, Benoist 1,513 ft., T.D. 1,522 ft.

Johnsonville, Wayne County: Texas 1 A. Peddicord, S½ NW SE NE 4-1s-6e, pumepd 117 bbl., 4,000 gal. acid, McClosky 3,176-82 ft., T.D. 3,182 ft.

United Prod. 6 A. Carriens, E½ NW SW 35-1n-6e, pumped 289 bbl., 20-qt. shot 3,010-19 ft., Aux Vases 3,003 ft., T.D. 3,022 ft.

Lawrence County: Wade & Brown 2 J. W. Clark, SE SE SE 3-2n-12w, dry at 1,030 ft., Pennsylvanian sand 385 ft., Bridgeport 1,023 ft.

Louden, Fayette County: Carter 2 E. P. Wood, NE NW SW 36-9n-3e, dry at 1,562 ft., Glen Dean 1,385 ft., Cypress 1,516 ft., Weiler 1,540 ft.

Mill Shoals, White County: Cherry & Kidd et al 1 Gray M, NE NE SW 30-3s-8e, pumped 178 bbl., 80-qt. shot 3,199-3,224 ft., Aux Vases 3,190 ft., T.D. 3,231 ft.

Pure 2-A W. B. Fox, N½ NW SW NW 19-3s-8e, pumped 74 bbl. oil and 39 bbl. water, Aux Vases 3,237 ft., T.D. 3,259 ft.

New Harmony, White County: Tide Water 10 Evans, S½ SW NW 4-4s-14w, pumped 128 bbl., perf. 2,853-58 ft., 1,000 gal. acid, 1,500 gal. acid 2,905-10 ft., 1,500 gal. acid 2,922-29 ft., McClosky 2,855 ft., T.D. 2,930 ft.

Superior 12 H. C. Ford et al, SW SW SE 4-5s-14w, pumped 250 bbl., 20 per cent water, 60-qt. shot 2,728-41 ft., Benoist 2,724 ft., T.D. 2,885 ft.

Noble, Richland County: Pure 15-A F. L. Wakefield, NW SE SW 23-4n-9e, pumped 37 bbl., natural, Weiler 2,587 ft., T.D. 2,611 ft.

North Boos, Jasper County: J. Carroll 3 Ross, NE NE SW 5-6n-10e, dry at 2,855 ft., Barlow 2,450 ft., Weiler 2,535 ft., Benoist 2,660 ft., Aux Vases 2,728 ft., Ste. Genevieve 2,759 ft., Rosiclare 2,796 ft., Fredonia 2,810 ft., McClosky 2,835 ft.

Rising Sun, White County: Skelly 4-A H. Karch, NW SE NE 24-6s-10e, pumped 71 bbl., 20-qt. shot 2,084-97 ft., reshot 40 qt. 2,084-97 ft., Palestine sand 2,079-97 ft., T.D. 2,098 ft.

Roland, White County: Sinclair 2 C. D. Reddy, NE SE SE 2-7s-8e, flowed 310 bbl., 20-qt. shot 2,770-75 ft., Benoist 2,745-76 ft., T.D. 2,947 ft.

Magnolia 1 General American Life, SW SW SW 1-7s-8e, pumped 28 bbl., Paint Creek sand 2,740 ft., T.D. 2,765 ft.

Rural Hill, Hamilton County: Reward et al 3 A. B. Anderson, NW SW SW 12-6s-5e, flowed 210 bbl., 115-qt. shot 3,161-3,200 ft., Aux Vases 3,166-90 ft., T.D. 3,204 ft.

Reward 4 Anderson, NE SW SW 12-6s-5e, pumped 103 bbl., 45-qt. shot 3,108-26 ft., Aux Vases 3,115-25 ft., T.D. 3,250 ft., P.B. 3,127 ft.

Shoenfeld 4 Hamilton, NE NW SE 13-6s-5e, pumped 250 bbl., perf. 3,250-60 ft., 2,000 gal. acid, McClosky 3,252-60 ft., 3,341-45 ft., T.D. 3,360 ft.

Schoenfeld et al 5 Hamilton, SE NW SE 13-6s-5e, flowed 720 bbl., 2,000 gal. acid, Ste. Genevieve 3,168 ft., T.D. 3,380 ft.

Shell 1 Braden Church, NE NW SW 13-6s-5e, flowed 425 bbl. ,perf. 3,234-50 ft., 3,273-80 ft., 2,500 gal. acid, 15-qt. shot 3,168-78 ft., Aux Vases 3,149-56 ft., 3,158-80 ft., Ste. Genevieve 3,195 ft., T.D. 3,393 ft.

Texas 7 T. Lockwood, NE SW SE 13-6s-5e, flowed 1,087 bbl., 5,000 gal. acid, Aux Vases 3,144 ft., Leivas 3,214 ft., McClosky 3,295 ft., T.D. 3,380 ft.

Kewanee 4 Culpepper, NW SW SE 14-6s-5e, flowed 1,140 bbl. in 17 hr., 5,000 gal. acid, McClosky 3,166-84 ft., T.D. 3,220 ft.

Magnolia 8 C. R. Sloan, NE NW SE 23-6s-5e, pumped 85 bbl., 30-qt. shot 3,117-34 ft., Aux Vases sand 3,112 ft., T.D. 3,134 ft.

Russellville, Lawrence County: J. Young 5 H. Bierhaus, W½ SW SE 14-4n-11w, 3,000,000 cu. ft. gas, Bridgeport 739 ft., T.D. 742 ft.

Sailor Springs, Clay County: McBride 2 R. Palmer, SE NE SE 34-4n-7e, pumped 87 bbl. oil and 17 bbl. water in 22 hr., 20-qt. shot 2,602-10 ft., Weiler 2,600 ft., T.D. 2,610 ft.

St. Francisville East, Lawrence County: Sinclair et al 3 Allstates Life, NW SW NE 22-2n-11w, pumped 109 bbl., 20-qt. shot 1,764-72 ft., Benoist sand 1,747 ft., T.D. 1,772 ft.

Simms, Wayne County: Bell Bros. 4 Fuhrer, E½ NE NW 33-1s-6e, pumped 292 bbl., Aux Vases 3,018-35 ft., T.D. 3,043 ft.

South Lawrence, Lawrence County: C. Evarts 1 Van Wye, NW NW NE 26-2n-14w, pumped 250 bbl., 20-qt. shot 1,357-96 ft., Biehl 1,357 ft., T.D. 1,396 ft.

West Centralia, Clinton County: Sistler & Strawser 4 Phoenix, NE NW SW 14-1n-1w, pumped 50 bbl. oil and 10 bbl. water, Benoist 1,434 ft., T.D. 1,441 ft.

Woodlawn, Jefferson County: Magnolia 2 J. J. Kaminski, NE SE SE 2-3s-1e, pumped 164 bbl., 10-qt. shot 1,959-62 ft., Benoist 1,949 ft., T.D. 1,962 ft.

(Reported week ending December 20)

Benton, Franklin County: Menhall 1 Rea, NW SE NE 26-6s-2e, pumped 210 bbl., Tar Springs 2,102 ft., T.D. 2,124 ft.

Adkins 3 C. W. & F. "W," SE NW SE 36-6s-2e, dry at 2,930 ft.

Adkins 5-A McKemie, SW NW NW 30-6s-3e, swabbed 78 bbl., Tar Springs sand 2,150 ft., T.D. 2,171 ft.

Bone Gap, Edwards County: Tide Water 1 Provident Mutual, E½ NE SW 12-1s-10e, pumped 82 bbl. oil and 210 bbl. water, McClosky 3,187 ft., T.D. 3,205 ft.

Clay, Clark County: Swan-King 1 Claypool, SW NE SE 1-9n-14w, dry at 1,687 ft.

Dale, Hamilton County: Pure 4 Kemmie-Mayberry, NE SE SE 7-6s-7e, flowed 1,149 bbl., Aux Vases 2,983-3,023 ft., T.D. 3,040 ft.

Ohio 1 C. W. Hall, NW NW SW 8-6s-7e, swabbed 108 bbl., Aux Vases sand 3,001-14 ft., T.D. 3,014 ft.

Dix, Jefferson County: Carter 2 J. Cabb, NE NW SW 10-1s-2e, pumped 138 bbl. oil and 15 bbl. water, Benoist 1,948 ft., T.D. 1,960 ft.

Dundas, Jasper County: Pure 2-A Roberts Consol., E½ NW NE 4-5n-10e, flowed 124 bbl., McClosky 2,807 ft., T.D. 2,843 ft.

Pure 4-A J. W. Honey, W½ NE NE 17-5n-10e, pumped 207 bbl., McClosky 2,790 ft., T.D. 2,830 ft.

Pure 5 G. E. Adams, E½ SW NE 20-5n-10e, pumped 152 bbl., McClosky 2,794 ft., T.D. 2,825 ft.

Dundas, Richland County: Pure 2 M. B. Elliott, E½ SW SW 29-5n-10e, pumped 40 bbl., McClosky 2,850 ft., T.D. 2,880 ft.

El Dorado, Saline County: Magnolia 1 V. Molinarolo, SE NW NE 8-8s-7e, pumped 13 bbl., Aux Vases sand 2,866-96 ft., T.D. 3,144 ft.

Griffin, Wabash County: Longhorn 22 Helm, NE NW NE 27-3s-14w, pumped 140 bbl., Tar Springs sand 2,167 ft., T.D. 2,174 ft.

Johnsonville, Wayne County: Ill.-Prod. 1 C. O. Ray, S½ SW NE 26-1n-6e, pumped 200 bbl., McClosky 3,155-65 ft., T.D. 3,185 ft.

Ohio 1-B N. V. Wells, S½ SE SE 26-1n-6e, pumped 86 bbl., McClosky 3,178-83 ft., T.D. 3,183 ft.

Texas 1-OA Haught Comm., S½ NW NE flowed 559 bbl., McClosky 3,191-95 ft., T.D. 3,232 ft.

Deep Rock 2 J. J. Porter, E½ NE SE 36-1n-6e, pumped 65 bbl., McClosky 3,197 ft., T.D. 3,337 ft., P.B. 3,268 ft.

Texas 2 L. G. Wilson, W½ NE NE SE 22-1n-6e, pumped 111 bbl., McClosky 3,146 ft., T.D. 3,165 ft.

United Prod. 7 S. M. Schnell, E½ SE NE 34-1n-6e, dry at 3,030 ft.

Ohio Fuel Supply 1 A. A. Hill, NE NW NE 4-1s-6e, swabbed 627 bbl., McClosky 3,186-94 ft., T.D. 3,194 ft.

Irons, White County: H. A. Brisch 1 H. Henson, SW SE SE 14-6s-8e, dry at 2,850 ft.

Lawrence, Lawrence County: Alford Pet. 4 Gutteredge, SW NE NW 29-3n-12w, pumped 35 bbl., Benoist 1,896 ft., T.D. 1,925 ft.

Louden, Fayette County: Carter 2 M. Buzzard, NE NW SW 35-9n-3e, dry at 1,544 ft.

Carter 2 Giles-Miller, NE SE NE 1-8n-3e, pumped 72 bbl., Weiler 1,530 ft., T.D. 1,543 ft.

Carter 3-D J. Sloan, NW NW 11-8n-3e, flowed 103 bbl. oil and 25 bbl. water, Devonian pay 3,129 ft., T.D. 3,135 ft.

Carter 5-D J. Hogan, NW NW 28-8n-3e, pumped 103 bbl. oil and 20 bbl. water, Devonian pay 3,080 ft., T.D. 3,101 ft.

Mill Shoals, White County: Hudson-Hess 1 A. J. Poorman, SW SW NE 30-3s-8e, pumped 252 bbl., Aux Vases 3,187 ft., T.D. 3,235 ft.

Mount Carmel, Wabash County: Dean & Morton 2 Hein, E½ NE SE NW 21-1s-12w, pumped 164 bbl., Cypress sand 1,976-97 ft., T.D. 1,997 ft.

New Harmony, White County: Superior 10 Greathouse, SW NE NE 4-5s-14w, pumped 50 bbl., Aux Vases 2,828-38 ft., T.D. 2,855 ft.

Superior 26-A E. Fitten, SE SE SE 29-4s-14w, pumped 110 bbl., 36 per cent water, Cypress sand 2,601 ft., T.D. 2,859 ft., P.B. 2,740 ft.

Cal Star Pet. 28 Miller-Ford, SW SW SW 32-4s-14w, pumped 146 bbl., Aux Vases 2,835-59 ft., T.D. 2,959 ft., P.B. 2,852 ft.

S. C. Yingling 1 C. Andres, SE NE NE 32-3s-14w, pumped 65 bbl., Aux Vases 2,866-82 ft., T.D. 2,992 ft., P.B. 2,884 ft.

First Nat. Pet. Trust 7 O. Bump, SE NW NW 33-3s-14w, flowed 320 bbl., McClosky 2,948 ft., T.D. 2,952 ft.

Superior 1 E. S. Dennis, SW NW NE 23-4s-14w, dry at 2,980 ft.

New Haven, White County: Hiawatha 8 Stinson, SE NE NE 19-7s-11e, pumped 10 bbl., Cypress sand 2,449 ft., T.D. 2,818 ft., P.B. 2,480 ft.

North Boos, Jasper County: Pure 4 J. T. May, NW NW SE 8-6n-10e, pumped 115 bbl., McClosky pay 2,812 ft., T.D. 2,850 ft.

Pure 3 E. O. Ross, SW NE SE 5-6n-10e, dry at 2,780 ft.

Texas 5 C. M. Jourdan, SE SE NW 8-6n-10e, swabbed 50 bbl., Ste. Genevieve 2,778 ft., T.D. 2,860 ft.

Parkersburg, Richland County: Ohio 1 G. G. Hull, W½ NW NE 20-2n-14w, pumped 30 bbl. oil and 40 bbl. water, McClosky 3,137 ft., T.D. 3,162 ft.

A. F. Dye 3 E. C. Kemp, SW NW SW 32-2n-14w, flowed 1,080 bbl., pay 3,099 ft., T.D. 3,117 ft., P.B. 3,114 ft.

Roland, White County: Carter 1 G. W. Greathouse, NE NE NE 11-7s-8e, flowed 244 bbl., Waltersburg sand 2,160 ft., Benoist 2,722 ft., T.D. 2,751 ft.

Rural Hill, Hamilton County: Shell 4 Ventrees, SE SW SE 12-6s-5e, flowed 488 bbl. in 13 hr., Aux Vases 3,060 ft., Levias 3,146 ft., T.D. 3,267 ft.

Shell 1 A. B. Anderson, NE NE NW 13-6s-5e, flowed 212 bbl., Aux Vases 3,119 ft., T.D. 3,380 ft., P.B. 3,252 ft.

Shell 2 L. F. Lockwood, NW NW NW 13-6s-5e, flowed 391 bbl., Ste. Genevieve 3,208 ft., T.D. 3,401 ft., P.B. 3,388 ft.

Shell 4 L. F. Lockwood, SE NW NW 13-6s-5e, flowed 196 bbl., Aux Vases 3,154 ft., Levias 3,244 ft., T.D. 3,366 ft.

Shell 1-B L. F. Lockwood, NE NE SW 13-6s-5e, flowed 1,023 bbl. in 22 hr., McClosky 3,297 ft., T.D. 3,310 ft.

Texas 5 L. Lockwood, NW SW SE 13-6s-5e, flowed 663 bbl., Aux Vases 3,092 ft., Levias 3,188 ft., McClosky 3,270 ft.

Texas 2 E. Smith, SE NE NE 13-6s-5e, flowed 616 bbl., Aux Vases 3,137 ft., Levias 3,178 ft., McClosky 3,315 ft., T.D. 3,350 ft.

Shell 3 Crabtree, SW NE SE 14-6s-5e, flowed 337 bbl. in 23 hr., Levias 3,188 ft., McClosky 3,299 ft., T.D. 3,364 ft.

Shell 3 Flannagan, NW SW NE 14-6s-5e, flowed 424 bbl., Aux Vases 3,168 ft., T.D. 3,440 ft., P.B. 3,189 ft.

Shell 1 School Comm., NW SE SE 14-6s-5e, flowed 469 bbl., Aux Vases sand 3,092 ft., Fredonia 3,240 ft., T.D. 3,312 ft.

(Continued on Page 79)

Hopkins County: Muskegon Development Co. 2 Knorr, SE NW SW 10-3n-12w, pump and flow 300 bbl. first 11 hr., T.D. 1,627 ft.

C. A. Perry and Gould & Cross 9 Schafer, NW SW NE Sec. 18, pump 300 bbl., acidized, T.D. 1,552 ft.

Clapsaddle & Harris 1 Lindsley, SW NE SW Sec. 20, wildcat, dry, T.D. 1,682 ft.

Overisel Township: Regal Dutch Petroleum Co. 1 Niers, C E½ NE NE 12-4n-14w, dry, T.D. 1,603 ft.

Arenac County

Deep River Township: W. E. Ross 1 Sinn Comm., NE SW NE 17-19n-4e, 3,460,000 cu. ft. gas, T.D. 1,512 ft.

Clare County

Winterfield Township: Taggart Bros. 35 Vandewoude-Richardson, C SW 21-20n-6w, 2,780,000 cu. ft. gas, T.D. 1,333 ft.

Gladwin County

Beaverton Township: Sun Oil Co. 1 Holycross, C W½ SE 26-17n-2w, 19 bbl., acidized, T.D. 3,906 ft.

Iosco County

Plainfield Township: Edmund A. Roberts 1 Spencer, NW NE SE 15-23n-5e, wildcat, dry, T.D. 3,466 ft.

Isabella County

Rolland Township: Rex Oil & Gas Co. 1 Babcock, NE SW NE 18-13n-6w, wildcat, dry, T.D. 3,591 ft.

Oakland County

Highland Township: Fisher-McCall Oil & Gas Co., Inc., 1 LeBel, NE SE SE 18-3n-7e, wildcat, dry, T.D. 1,600 ft.

Osceola County

Lincoln Township: Taggart Bros. Co. 32 Kimball-Johnson, C SW 8-18n-10w, 6,230,000 cu. ft. gas, T.D. 1,271 ft.

Turner Petroleum Corp. 4 Gas Unit, C SE Sec. 12. 672,000 cu. ft. gas, T.D. 1,537 ft.

Ohio Oil Co. 2 Riggs, C S½ SE NE Sec. 19, 2,328 bbl., T.D. 3,612½ ft.

Gordon Oil Co. and Kirkham Kales Co. 1 Louks, C N½ NE SE Sec. 20, 850 bbl., T.D. 3,568 ft.

Pure Oil Co. 1-A Richards, C S½ NW NW Sec. 20. 6,336 bbl., T.D. 3,605 ft.

Taggart Bros. Co. 2 Cook, C NE Sec. 27, 3,100,000 cu. ft. gas, T.D. 1,415 ft.

Ohio Oil Co. 1 Gabel-Wieck, C S½ NE SE Sec. 31. 8,400 bbl., T.D. 3,585 ft.

Pure Oil Co. 1 Reber, C N½ NE NW Sec. 32, 5,597 bbl., T.D. 3,611 ft.

Pinora Township: Pure Oil Co. 1 Morrison, C S½ SE NE 25-18n-11w, pumping 16 bbl., T.D. 3,627 ft.

Roscommon County

Roscommon Township: Ohio Oil Co. and Eugene Hilliard 1-A Ohio, Hilliard State, C S½ SE NE 33-21n-3w, 4,200 bbl., T.D. 3,350 ft.

Freeman Oil Co. 2-A State, C N½ NE SW Sec. 34, 5,400 bbl., T.D. 3,408 ft.

St. Clair County

China Township: Diamond Crystal Salt Division of General Foods Corp. 19 fee, S½ NE 1-4n-16e, wildcat, dry, completed as salt well, T.D. 2,582 ft.

Van Buren County

Bloomingdale Township: George L. Kernodle 1 Katts, SE SW SE 1-1s-14w, pumping 66 bbl., acidized, T.D. 1,297 ft.

Bridger-Basin Oil Co. 1 Stadler, NW SE SW Sec. 1, pumping 30 bbl., acidized, T.D. 1,267 ft.

Globe Drilling Co. 1 Banks, SE SE SE Sec. 4, wildcat, dry, T.D. 1,305 ft.

Clapsaddle & Harris 1 Cook, NE NE NE Sec. 10, dry, T.D. 1,324 ft.

MICHIGAN OPERATIONS

New Fields to Bear Brunt of Production Curtailment

By OTTO C. PRESSPRICH

SAGINAW, Mich.—The Michigan oil industry stood ready today to comply with the request of the federal petroleum administration for conservation of oil resources by reducing production in the new year.

Arrangements to comply with the request of Harold L. Ickes, federal petroleum coordinator, that Michigan production be cut to 47,000 bbl. a day during January, were made last week at a meeting in the state capital at Lansing of the state Oil Advisory Board and leaders of the industry.

The action will cut about 9,000 bbl. from daily production which for December is estimated at 56,000 bbl. a day. Secretary Ickes informed P. J. Hoffmaster, state supervisor of wells, that his request is part of a national plan to control oil production.

The task of meeting the new curtailment procedure will fall upon the prolific Reed City field, the new Headquarters field in Roscommon County, and the Winterfield area of Clare County, principally, it was agreed. Board members pointed out that efforts to curb output from many of the older fields would in many instances defeat the conservation aspects of the program by making complete recovery impossible.

Meanwhile the pace of development continued last week with 27 completions being recorded as 13 new oil wells were completed for initial daily potential in excess of 33,000 bbl. There were five more gas wells included in the report, including production confirming the new natural-gas reservoir discovered in Osceola County. Other completions were dry holes, among them the Oakland County wildcat test which could not be developed to profitable production, although a good early oil showing had been uncovered, causing hope for new potential in southeastern Michigan.

Six of the new oil wells of last week were in the Reed City field and two others were big producers in the Roscommon County area. Hopkins Township of Allegan County continued to merit the interest of recent months with two good wells, one of them producing 300 bbl. initially in the first 11 hours.

Continental Oil Co., of Ponca City, Okla., prospecting in the vicinity of Albion, Mich., reported it had found a showing of natural gas at 1,600 ft., south of the city. The location is 60 miles from any other production.

During the week the state conservation department issued 18 drilling permits, bringing the year's total to 1,036. Seven permits went to Clare County, two each to Allegan and Van Buren, three to Osceola, one each to Bay, Midland, Ottawa, and Roscommon.

MICHIGAN COMPLETIONS

Allegan County

Casco Township: Lang & Lewis 1 Dow, SE NE NW 24-1n-16w, wildcat, dry, T.D. 1,185 ft.

MICHIGAN COMPLETIONS

(Reported week ending December 20)

Allegan County

Hopkins Township: C. A. Perry and Cross & Gould 3 Schafer, SW NE SW 8-3n-12w, pump and flow 125 bbl., T.D. 1,619 ft.

Voorhees Drilling Co. B-1 Puschel, NE SW SE Sec. 18, dry, T.D. 1,565 ft.

Regal Dutch Petroleum Co. 1 Wamhoff, SW NW NE Sec. 18, 185 bbl., first 18 hr., T.D. 1,551 ft.

Bay County

Monitor Township: L. C. MacGregor 2 Staudacher, SW SW NW 2-14n-4e, pumping 43 bbl., T.D. 2,874 ft.

Berrien County

Niles Township: L. W. Lawrence 1 Stafford, NE NE SW 1-7s-17w, wildcat, temporarily abandoned, T.D. 602 ft.

Clare County

Winterfield Township: Taggart Bros. Co. 96 Acker-Blackledge, C SE 19-20n-6w, 16,950,000 cu. ft. gas, T.D. 1,399 ft.

Gladwin County

Sheridan Township: W. L. McClanahan and Cline Bagwell 1 State, C N½ NW SW 14-19n-2e, wildcat, dry, T.D. 3,233 ft.

Ottawa County

Tallmadge Township: John C. Newell 4 Rapp, SE NE SW 23-7n-13w, pumping 5 bbl., T.D. 1,880 ft.

Van Buren County

Bloomingdale Township: Earl G. Hartman 1 Ampey, SE SE SW 2-1s-14w, pumping 15 bbl., T.D. 1,289½ ft.

W. E. Dotson 4 Holdeman, NE SE NE Sec. 11, pumping 70 bbl., T.D. 1,292 ft.

R. D. Malcolm Tr. 2 Allen, SW SW NW Sec. 12, pumping 40 bbl., T.D. 1,296 ft.

Pennsylvanian Sand Pay Shows At Mount Vernon

By STAFF CORRESPONDENT

EVANSVILLE, Ind.—Possibilities for Pennsylvanian sand production in the Mount Vernon field, Posey County, were indicated last week by Carter Oil Co. 1 J. A. Erwin, SW SW NE 1-7s-14w, about 1½ miles north of production. The well apparently was a failure in the Waltersburg and Cypress which had only poor saturation, but operators were testing a show of oil in the Pennsylvanian which was marked by an electrical log at 1,270-1,300 ft. Originally the test was drilled to a total depth of 2,499 ft. The zone is not now productive at Mount Vernon.

In other parts of the field, several wells were drilling and some being completed. Carter 1 J. A. Erwin, SW SW NE 1-7s-14w, pumped 230 bbl. of oil in 8 hours from Waltersburg and Cypress sands at a total depth of 2,495 ft. No. 2 Erwin, SE SE NW 1-7s-14w, pumped 63 bbl. in 2 hours from the same formations but was shut down for lack of storage. No. 3 Erwin, SE SW NE 1-7s-14w, was rigging up standard tools to drill plug.

Eastern limits of the field apparently were defined by Martin & Volkmann 1 P. Hagemann, NW NE SW 6-7s-13w, which was dry at a total depth of 2,683 ft. Both the Cypress and Waltersburg carried water.

Wildcat Progress

About 7 miles south and 3 miles west of Evansville in Vanderburgh County, derrick was up for Jean Longoria 1 W. L. Bauer, a wildcat in SW SW SW 22-7s-11w. . . . In Gibson County, Graham 1 Archie Thompson, N½ SW SW 11-3s-12w, a wildcat about 1 mile southwest of Owensville, was drilling at 1,975 ft. after topping Waltersburg at 1,865 ft. . . . Ru-Mar Drilling Co. 1 G. Moorelock, a wildcat in NW SE NW 26-7s-14w, Posey County, was drilling at about 600 ft.

INDIANA COMPLETIONS

Wildcats

Gibson County: R. D. Brown, Inc., 1 Graulich, SW NE SE 36-1s-10w, pumped 19 bbl., 60-qt. shot 1,327-35 ft., T.D. 1,338 ft.

Pike County: Joe Dawson et al 1 Patberg, SW NW SE 16-3s-7w, pumped 48 bbl., natural, 34.6° gravity, pay 1,143-51 ft., T.D. 1,151 ft.

Spencer County: Kidd & McQueen 1 Lake, SE SW NE 33-5s-5w, dry at 1,237 ft.

(Reported week ending December 20)

Harrison County: Harrison Co. Dev. 1 A. L. Brown, NE SE SE 30-3s-4e, dry at 895 ft., New Albany 789 ft.

Jasper County: Nat. Pet. Co. et al 1 Rose, SE SE NW 4-29n-5w, dry at 908 ft.

Pulaski County: Herman Erb 1 Albrecht, W½ NE NW SW 2-29n-4w, dry at 931 ft.

Vanderburg County: P. F. Osborn 1 B. Edmond, SE SW NW 16-7s-11w, pumped 34 bbl., natural, pay 1,645-55 ft., T.D. 2,562 ft. *Pool opener.*

Fields

Bufkin South, Posey County: Central States et al 1 Hermser, NW SE NW 30-6s-12w, pumped 35 bbl., 40-qt. shot 985-1,001 ft., T.D. 1,001 ft.

Central States 2-C Seifert, NE NW NW 30-6s-12w, 500,000 cu. ft. gas, R.P. 175 lb., sand 335-85 ft., T.D. 385 ft.

Griffin, Gibson County: Continental 56 Bozeman, NW NE SW 23-3s-14w, pumped 180 bbl., natural, pay 2,155-72 ft., T.D. 2,172 ft.

Continental 55 Bozeman, NE NE NE 26-3s-14w, pumped 170 bbl., natural, Menard 1,944 ft., T.D. 2,126 ft.

Griffin, Posey County: Continental 4 Kleiderer, W½ NE SW NW 35-3s-14w, dry at 2,594 ft.

Hatfield, Spencer County: Benoist et al 3 Abbott, SE SW NE NW 7-7s-7w, pumped 90 bbl. oil and 12 bbl. water, natural, pay 1,005-31 ft., T.D. 1,031 ft.

Trenton, Randolph County: Unionport 1 Slack, W½ E½ NE 9-19n-13e, 70,000 cu. ft. gas, 40-qt. shot 1,042-88 ft., Trenton 1,042 ft., T.D. 1,088 ft.

(Reported week ending December 20)

Cannelburg, Daviess County: J. W. Cannon 2 Beck, pumped 12 bbl., T.D. 633 ft.

J. W. Cannon 1 Carlin, E½ W½ NW 5-2n-5w, pumped 5 bbl. oil and 4 bbl. water, T.D. 741 ft.

Griffin, Gibson County: Hall-Edwards 50 Maier, S½ SW 31-2s-13w, flowed 424 bbl., 2,478 ft.

Laconia, Harrison County: J. W. Griest 1 Steepleton, SW NE SW 20-5s-4e, dry at 275 ft.

Veale, Daviess County: Hargarco 10 Gaither, SW SW NE SW 21-2n-7w, dry at 1,170 ft.

Ohio Fields

ZANESVILLE, Ohio.—Completions in the Ohio fields were light during the week with numerous dry holes recorded. The best completion was good for 76 bbl. in the Clayton pool in Perry County.

The Cambridge arch in Washington County is being given a deep test. The Columbian Carbon Co. is spudding on the Charles Augenstein tract, Lot 49, Adams Township, 3 miles north of Lowell.

OHIO COMPLETIONS

Ashland County, Lake Township: Robinson et al 1 L. M. Sprang, Sec. 17, dry, Clinton, T.D. 2,997 ft.

Athens County, Ames Township: Ohio Fuel 3 Robert King, Fraction 2, 60,000 cu. ft. gas, shot, second Berea, T.D. 1,603 ft.; (old well deepened from Maxburg).

Canaan Township: Wallace & Sons 1 Fred Derr, Fraction 6, 50,000 cu. ft. gas, shot, T.D. 1,390 ft.

Lodi Township: McBill O. & G. 6 Fred Sapp, Sec. 13, dry, first Cow Run, T.D. 380 ft.

Coshocton County, Perry Township: Blackburn et al 1 J. L. Funk, Sec. 23, 130,000 cu. ft. gas, Clinton 3,015-55 ft.

Preston 7 H. Donaker, NE Sec. 16, 85 bbl., Clinton T.D. 3,130 ft.

Cuyahoga County, Dover Township: East Ohio 2 C. Glendenning, Lot 24, 950,000 cu. ft. gas, Newburg, T.D. 2,273 ft.

Guernsey County, Cambridge Township: George Jewell et al 1 G. W. McManaway, fourth quarter, show gas and oil, plugged, Berea, T.D. 1,255 ft.

C. C. Wharton 1 W. A. Albright, fourth quarter, show oil and gas, shot, plugged, Berea, T.D. 1,103 ft.

Knox County, Brown Township: Ohio Fuel 1 A. O. Giffin, Lot 1, 21,000 cu. ft. gas, shot, plugged, Clinton 2,737-45 ft., T.D. 2,785 ft.

Liberty Township: Delga Oil Co. 1 John Cochran, dry, Berea, T.D. 550 ft.

Licking County, Madison Township: J. T. Bebout 5 Horatio Holtz, dry, Clinton 2,724-54 ft., T.D. 2,775 ft.

Medina County, Hinckley Township: P. C. Bishop 1 Lillie Bellus, Lot 55, 115 bbl. after shot, with 69,000 cu. ft. gas, Little lime, T.D. 3,167 ft.

Ohio Fuel Gas Co. 1 Mary Van Dusen, Lot 47, 10 bbl. with 47,000 cu. ft. gas, Clinton, T.D. 3,214 ft.

Meigs County, Salem Township: Downie et al 1 Frank Gardner, Sec. 1, dry, Maxon (water), T.D. 745 ft.

Monroe County, Bethel Township: Quarry O. & G. 6 F. Simmons, Sec. 29, 70,000 cu. ft. gas, Berea, T.D. 2,005 ft.

Morgan County, York Township: Ohio Fuel 2 Charles Snyder, Sec. 23, 70,000 cu. ft. gas, shot, plugged, Clinton 4,241-72 ft., T.D. 4,306 ft.

Muskingum County, Washington Township: Wittmer Co. 1 Guy Virts, Lot 12, 60,000 cu. ft. gas, plugged, Clinton 3,978-4,017 ft., T.D. 4,088 ft.

Noble County, Enoch Township: Felix Gerst 42 Casper Scott, Sec. 27, dry, stray, T.D. 571 ft.

Perry County, Clayton Township: Pure Oil 3 J. A. Cannon, Sec. 7, 76 bbl., shot, Clinton, T.D. 3,270 ft.

Stark County, Lake Township: J. C. Steiner 1 Alfred Smith, Sec. 34, 150,000 cu. ft. gas, shot, red Clinton, T.D. 4,614 ft.

Plain Township: Lyons et al 3 N. A. Dickens, Sec. 23, 150,000 cu. ft. gas, shot, Clinton, T.D. 4,644 ft.

Washington County, Liberty Township: Best Run Oil Co. 3 Glen Myers, Sec. 28, 80,000 cu. ft. gas, shot, Germantown, T.D. 1,081 ft.

Ludlow Township: Harry Binegar 2 D. A. Devore, Sec. 25, dry, Salt sand, T.D. 1,010 ft.

Salem Township: Earl Montgomery 1 fee, Lot 42, ½ bbl., shot, sand 820-30 ft., T.D. 840 ft.

Warren Township: Henderson Oil 1 J. Cook heirs, Sec. 3, 100,000 cu. ft. gas, stray, T.D. 1,225 ft.; (old well deepened).

Wayne County, Plain Township: Kemrow Co. 1 S. L. Long, Sec. 34, dry, Clinton, T.D. 3,195 ft.

Four Oil Wells Completed In Eastern Kentucky

ASHLAND, Ky.—Four oil wells and three gas wells were completed in eastern Kentucky last week with drilling operations seemingly continuing unabated despite the holiday season. The oil wells have a combined daily production of 32 bbl. and the gas wells have a combined open flow of 1,171,000 cu. ft. of gas per day.

A number of wells are rapidly nearing the completion stage and a number of new locations have been made during the past 30 days. Indications point to a continued drilling program on the part of a majority of the operators in this part of the state during the coming few months. Field reports have been sparse in some counties in this area during recent weeks but conditions of hill roads may have caused a reduction in this department.

Three of the four oil wells completed were in Powell County and the other in Lawrence. A fifth well has reached total depth but full completion data are not available.

EASTERN KENTUCKY COMPLETIONS

Powell County: G. L. Jamieson 7 Jess Case, South Fork, 16 bbl., T.D. 650 ft.

Pilot Property 7 B. F. Creek, Miller's Creek, 2 bbl., T.D. 850 ft.

John Buchman 2 Millis Hare, Miller's Creek, 5 bbl., flowing, T.D. 850 ft.

B. Solomont 4 Ova Spears, Miller's Creek, T.D. 800 ft., well has not been gaged.

J. W. Turner, trustee, 1 Albert Oliver, Right Hand Fork of Newcomb, 5 bbl., T.D. 927 ft.

Pike County: Kentucky-West Virginia 647 Sallie Jackson, Johns Creek, T.D. 2,589 ft., 430,000 cu. ft. of gas, shale.

Floyd County: Kentucky-West Virginia 654 James Nunnery, Mill Branch, Johns Creek, T.D. 2,589 ft., 622,000 cu. ft. gas, shale.

Kentucky-West Virginia 5355 John M. Layne, Clear Creek, T.D. 2,954 ft., 119,000 cu. ft. of gas, shale.

WESTERN KENTUCKY COMPLETIONS

Daviess County, Handyville district: Teller 7 E. F. Lebold, 99A., 100 bbl., shot Jett sand 1,261-78 ft., T.D. 1,292 ft.

Muhlenberg County, Weir district: Burtrum et al 1 W. and R. Jenkins, dry, T.D. 365 ft.

Ohio County, Pleasant Ridge district: Wilkins & Massie 6 E. K. Mosley, 20 bbl., shot Jett sand 822-63 ft.

Pleasant Grove Church district: Revlis Oil 6 A. Davidson, dry at 342 ft.

Adaburg district: Ohio 17 W. B. Kelly, key well, T.D. 600 ft.

(Reported week ending December 20)

Daviess County, Oklahoma district: Globe Oil Co. 4 C. T. Westerfield, dry hole, T.D. 550 ft.

Birk City district: W. Sargent et al 2 Laura Hagan, 40 bbl., stray sand 1,024-35 ft., T.D. 1,038½ ft.

Hancock County, Floral district: Henry Scholl 14 Birch Parrott, 5 bbl., Jett sand 520-35 ft., T.D. 537 ft.

Union County, Morganfield district: Smith & Toombs 1 Harold Brown, 5 bbl., stray sand 1,387-93 ft.

Louisiana Gulf Coast

(Continued from Page 68)

Stanolind Oil & Gas Co. is moving in material for 1 R. L. Mills in 14-7s-3e. . . . In the Westwego field, Jefferson Parish, Reese Carter 2 Craven in 3-13s-23e, is bottomed at 10,162 ft., with 7-in. casing cemented at 10,100 ft., and is to be tested through perforated casing at 9,720-38 ft.

Wildcats Near Critical Stages

Several wildcats located throughout the district had reached critical stages. In the East Baton Rouge field, East Baton Rouge Parish, William Helis 12 Nelson is drilling in shale below 9,998 ft. while in La Fourche Parish, Ernest Cockrell 2 La Fourche Land Co., 32-18s-22e, was drilling in shale below 5,025 ft. Texas 1-B La Fourche Basin Levee district, in 29-19s-24e, was drilling in lime below 8,223 ft. In St. Martin Parish, midway between the Section 28 dome and the Bayou Boullion field, Amerada 1 St. Martin Land Co., is drilling in shale below 12,473 ft. with no shows of oil or gas reported.

Progress Reported in Deep Oriskany Gas Tests

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Dec. 29.—On the Fayette anticline in South Huntington Township, Fayette County, Pennsylvania, the Peoples Natural Gas Co. is shut down at 7,362 ft., Jacobs Creek Oil Co., to run casing. The top of the Onondaga lime was reached at 7,317 ft. and the chert at 7,348 ft. . . . On Chestnut Ridge, South Union Township, Fayette County, New Penn Development Co., William E. Snee et al are drilling at 5,131 ft. at 4 Heyn. . . . No progress has been made in jarring on the tools at 6,696 ft., Kirby estate. . . . In the Carothers test they are drilling in new hole at 5,475 ft. . . . The Greensboro Gas Co. topped the Onondaga lime in its test on the Barton estate at 7,142 ft. and the top of the chert at 7,158 ft., with 231,000 cu. ft. of gas at 7,174-78 ft. and are drilling at 7,181 ft.

Also on the Barton estate, the Peoples Natural Gas Co. is cleaning out 3 Piedmont Coal Co. after shot at 7,249-72 ft. The gas now tests 720,000 cu. ft. In 4 Piedmont Coal Co. is drilling at 7,803 ft. . . . In Richhill Township, Greene County, the Natural Gas Co. of West Virginia is fishing at 6,540 ft. at 1 Andrew Workman. . . . In Center Township, Beaver County, St. Joseph Lead Co. is drilling 1 J. P. Koehler at 4,040 ft.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County, Bethel Township: Local Co. 1 Held, 104,000 cu. ft. gas, Tiona, T.D. 3,046 ft.
Kiskiminitas Township: Peoples 1 Lewis Kunkle, 49,000 cu. ft. gas, T.D. 3,400 ft.
Wayne Township: R. C. Galbraith 2 Alcorn, 27,000 cu. ft. gas, Bradford, T.D. 3,205 ft.
Clarion County, Clarion Township: Jefferson & Elk 2 Reinsel, 28,000 cu. ft. gas, Murraysville, T.D. 3,010 ft.
Limestone Township: Swartfager et al 1 Smith, 97,000 cu. ft. gas, Hundred-foot, Thirty-foot and Bradford, T.D. 2,781 ft.
Fayette County, Nicholson Township: Mayne et al 1 Isaac Wood, drilled deeper from 1,840 ft., dry, T.D. 2,670 ft.
Greene County, Monongahela Township: Convex Glass 1 Gabler, 4,500,000 cu. ft. gas, R.P. 450 lb., Big Injun, gas 1,477-79 ft., T.D. 1,495 ft.
Equitable Gas 1 Rich, 57,000 cu. ft. gas, R.P. 350 lb., Bayard, gas 2,848 ft., T.D. 2,947 ft.
Morgan Township: Peoples 1 Hogue, drilled deeper from 2,300 ft., 91,000 cu. ft. gas, Bayard, T.D. 3,153 ft.
Washington County, North Strabane Township: Carnegie 2 Gilkeson, drilled deeper from 885 ft., 103,000 cu. ft. gas, Big Injun, gas 1,509-12 ft. and 1,591 ft., T.D. 1,785 ft.
Nottingham Township: H. B. Scott et al 1 McNary, dry, T.D. 2,975 ft.
South Franklin Township: J. L. Dunn et al 1 Pedicord, 90,000 cu. ft. gas, Gas sand, gas 1,329 ft., T.D. 1,424 ft.
Westmoreland County, Bell Township: Apollo 1 Masters, 984,000 cu. ft. gas, Hundred-foot, gas 1,668, 1,675-77 ft., T.D. 1,684 ft.

WEST VIRGINIA COMPLETIONS

Boone County, Washington district: Hope 8581 Canterbury, 1,565,000 cu. ft. gas, Big lime, T.D. 1,378 ft.
Cabell County, Barboursville district: Chaffin 1 Gearhart, 933,000 cu. ft. gas after shot, R.P. 460 lb., Brown shale, T.D. 3,310 ft.
Calhoun County, Sherman district: Paul B. Bowser et al 2 E. Z. McDonald, 20 bbl., Big Injun, T.D. 2,088 ft.
Clay County, Buffalo district: Pittsburgh and West Virginia 7793 Elk River, 200,000 cu. ft. gas, Big Injun, T.D. 2,170 ft.
Henry district: Virginian 63 Brown, Swan, Goshorn & Geary, 5 bbl., Big Injun, T.D. 1,834 ft.
Harrison County, Eagle district: Hope 2301 James Griffin, 75,000 cu. ft. gas, Thirty-foot and Fifth, T.D. 2,477 ft.
Marion County, Lincoln district: Monongahela 3 D. D. Hawkins, dry, Fifth, T.D. 2,900 ft.
Putnam County, Curry district: Win Gas 1 Walter Johnson, 189,000 cu. ft. gas after shot, Berea, T.D. 2,125 ft.
Buffalo Creek 1 John H. Allen, 119,000 after shot, Berea, T.D. 2,300 ft.
Ritchie County, Clay district: Howard Hall 1 Joe Milbauer, 40,000 cu. ft. gas, 3 bbl., Keener, T.D. 1,835 ft.
Grant district: A. R. Kelly 1 A. C. Payne, dry, Big Injun, T.D. 2,135 ft.
West Virginia Investment 26 Joe Park et al, 30 bbl., Keener, T.D. 1,955 ft.
Tyler County, Union district: Gale Oil 13 George Smith, 10 bbl., 302,000 cu. ft. gas, Maxon, T.D. 1,530 ft.
Upshur County, Meade district: Cumberland & Allegheny 314 Harris, 85,000 cu. ft. gas, Gordon, T.D. 2,120 ft.
Wayne County, Union district: Owens, Libby-Owens 1 O.W. Mills, 152 cu. ft. gas after shot, Brown shale, T.D. 3,477 ft.
Wirt County, Burning Springs district: S. W. Douglass

(Continued on Page 78)

Kansas Fields

(Continued from Page 69)

S½ NE SE 22-14-14w, potential 128 bbl., Lansing 2,994-96 ft., T.D. 3,065 ft.
Cities Service 5 Strecker-B, E½ SE NE 36-14-14w, potential 1,552 bbl., La Motte 3,133-35 ft.
Stanolind 7 H. Boxberger, E½ SE SW 14-14-14w, potential 644 bbl., Lansing 2,995-3,012 ft., T.D. 3,079 ft.
Keesling, Rice County: Herndon Drilling 1 McGlynn, E½ SE SW 4-20-9w, 236 bbl., Arbuckle 3,230-48 ft.
Kraft-Prusa, Barton County: Sinclair Prairie 2 Harzman, SW SW SE 33-16-11w, potential 2,338 bbl., Arbuckle 3,332-36 ft.
Lindsborg, McPherson County: M. & L. Oil Co. 1 Johnson, W½ SW SE 7-17-3w, 759 bbl., Viola 3,347-53 ft.
McLouth, Jefferson County: W. O. Smyth 1 Todd, SW SE 20-9-20e, dry, T.D. 1,505 ft.
Hatcher & Fisk 1 Schrader, NW SW 29-9-20e, gaged 15,900,000 cu. ft. gas, Bartlesville 1,412-30 ft.
Hatcher & Fisk 2 Kimmel, NW NW 5-10-20e, 750,000 cu. ft. gas, Bartlesville 1,513-18 ft.
Medicine Lodge, Butler County: Barbara Oil 1 Wilson-B, C NW 20-33-13w, 22,842,000 cu. ft. gas, Mississippi 4,624-52 ft.
Peace Creek, Reno County: Hall & Kessler 1 Anderson, N½ NW SW 8-24-10w, dry, T.D. 3,910 ft.
Ray, Phillips County: Cities Service 4 Pinkerton, NE SE SW 29-5-20w, potential 2,117 bbl., La Motte 3,603-10 ft.
Cities Service 1 Solt, NE NE SW 31-5-20w, potential 2,044 bbl., La Motte 3,616-34 ft.
Rick, Barton County: Ed Jones 1 Rick-B, SW NW SW 1-19-11w, dry, T.D. 3,387 ft.
Texas 2 Birzer, N½ SE SE 2-19-11w, 37 bbl., Lansing 3,028-32 ft., T.D. 3,374 ft.
Schaeffer, Stafford County: Texon 1 Schaeffer, W½ SW SW 3-21-13w, 436 bbl., Arbuckle 3,546-58 ft.
Silica, Rice County: Gulf 3 Hirsh, N½ SW NE 18-20-10w, 230 bbl., Arbuckle 3,298-3,307 ft.
Stafford, Stafford County: Stanolind 3 O'Connor, E½ NW NW 14-24-12w, 3,000 bbl., Viola 3,830-42 ft.
Stoltenberg, Ellsworth County: L. W. Prunty 3 Skalicky, W½ NE NW 9-16-10w, dry, T.D. 3,315 ft.

Miscellaneous

Butler County: Adair & Morton 2 Thomas-B, SW NW SE 10-28-7e, 342 bbl., Mississippi 2,762-72 ft.
Greenwood County: H. A. Miller et al 1-B Grundy, NE NW SW 7-27-11e, 10 bbl., Mississippi 1,900-03 ft.
Hillsboro, Marion County: C. L. Brosius 1 Funk, W½ SW NE 13-19-2e, dry, T.D. 2,917 ft.

NEBRASKA COMPLETIONS

(Reported week ending December 20)

Falls City, Richardson County: Ohio Oil Co. 10 Bucholz, NW cor. SW 17-1n-16e, water, Hunton 2,266 ft.
Ohio Oil Co. 11 Bucholz, CNL NW SW 17-1n-16e, dry, Hunton 2,289 ft.

Permian Basin, Panhandle

(Continued from Page 66)

C.S.L. Survey, at last report was drilling below 4,320 ft.

The wildcat, which is west of the discovery well about 2 miles, is O'Neal Drilling Co. 1 Wright. Contracted to 5,250 ft., the wildcat is in the center of Labor 14, League 61, Martin C.S.L. Survey.

NORTHERN WEST TEXAS COMPLETIONS

(24-hr. rating based on last 3 hr. of 6-hr. gage)

Fields

Emma, Andrews County: Likin & Hall 1-B University, elev. 3,178 ft., 1,297 bbl., pay 4,275-4,372 ft.
Seminole, Gaines County: Amerada 1 W. C. Malone, elev. 3,320 ft., 140 bbl., shot 5,208-40 ft.
Slaughter, Cochran County: Magnolia 6-A Mallett, elev. 2,660 ft., 1,494 bbl., acid 4,945-5,030 ft.
Magnolia 20 Woodley, elev. 3,682 ft., 848 bbl., pay 4,950-94 ft.
T. P. Coal 2 Tarver, elev. 3,685 ft., 977 bbl., acid 4,995-5,015 ft.
Slaughter, Hockley County: Stanolind 43-B Slaughter, elev. 3,523 ft., 1,174 bbl., acid 5,012-85 ft.
Texas 2 Baker, elev. 3,569 ft., 2,388 bbl., acid 4,990-5,044 ft.
Texas 13-B Mallett, elev. 3,585 ft., 1,248 bbl., acid 4,945-5,024 ft.
Texas 20-E Mallett, elev. 3,507 ft., 1,904 bbl., acid 4,980-5,010 ft.
Magnolia 4-B Slaughter, elev. 3,599 ft., 1,203 bbl., acid 4,948-5,034 ft.
Stanolind 4-B Slaughter, elev. 3,530 ft., 708 bbl. oil and 4 per cent water, acid 4,970-5,045 ft.
Stanolind 42-B Slaughter, elev. 3,523 ft., 765 bbl., acid 5,005-65 ft.

Texas Panhandle

AMARILLO, Tex., Dec. 29.—Of the 12 tests completed in the Panhandle district during the past week, 2 were dry, 2 were small gassers, and the remaining 8 were completed for oil production. The daily potential of the oil completions amounted to 2,095 bbl., and the two gas tests had a daily yield of 113,000,000 cu. ft. The best producer for the week was the Huber Petroleum Corp. 1 Weatherly, in Section 25, Block Y, A.&B. Survey, Hutchinson County. It tested 614 bbl. natural.

The district had 17 new locations for the week, a slight increase over the previous week. Hutchinson led the field with nine new locations, while Gray County received seven, and Carson County one.

TEXAS PANHANDLE COMPLETIONS

Gray County: Cree & Hoover 1 Jackson, Sec. 94, Blk. B-2, H.&G.N. Sur., 97 bbl., pumping, 730-qt. shot 2,914-3,031 ft.
Phillips 4 Taylor, Sec. 24, Blk. B-2, H.&G.N. Sur., 207 bbl., pumping, pay 2,908-3,000 ft., T.D. 3,013 ft.
Skelly 7 Taylor, Sec. 24, Blk. B-2, H.&G.N. Sur., 311 bbl., pumping, 630-qt. shot 2,870-2,982 ft.
Smith Bros. 1 Cole, Sec. 104, Blk. 3, I.&G.N. Sur., dry at 3,306 ft.
Hutchinson County: Danube Oil Corp. 11 Sanford, Sec. 78, Blk. 46, H.&T.C. Sur., 170 bbl., pumping, pay 2,749-66 ft., T.D. 2,770 ft.
Huber Pet. Corp. 17 Weatherly, Sec. 25, Blk. Y, A.&B. Sur., 614 bbl., pay 2,905-3,037 ft., T.D. 3,074 ft.
Shell 39 Harvey Sisters, Sec. 14, Blk. M-21, T.C. Sur., 335 bbl., 155-qt. shot 3,026-85 ft., T.D. 3,090 ft.
Shell 40-B Harvey Sisters, Sec. 14, Blk. M-21, T.C. Sur., 305 bbl., pumping, 160-qt. shot 3,023-82 ft.
Stekoll Oil Co. 19 Whittenburg, Sec. 21, Blk. 47, H.&T.C. Sur., 56 bbl., pumping, 150-qt. shot 3,020-80 ft.
Moore County: Texoma Natural Gas Co. 3-9 Brown, Sec. 3, Blk. M-1, 9,800,000 cu. ft. gas, pay 2,540-2,763 ft., T.D. 2,961 ft.
Wheeler County: Charlotte Oil Co. 1 Mitchell, Sec. 90, Blk. 13, H.&G.N. Sur., 1,500,000 cu. ft. gas, 210-qt. shot 2,045-95 ft., T.D. 2,133 ft.
Teci Production Co. 1 Calhoun, Sec. 72, Blk. 13, H.&G.N. Sur., dry at 2,270 ft.

(Reported week ending December 20)

Carson County: R. B. Burnett 9 Burnett, Sec. 115, Blk. 5, I.&G.N. Sur., 52 bbl. oil and 9,000,000 cu. ft. gas, pay 3,019-3,110 ft.
Gray County: Cities Service 2 Hughey, Sec. 229, Blk. 3, I.&G.N. Sur., 72 bbl., pumping, 200-qt. shot 3,131-88 ft., T.D. 3,198 ft.
Kewanee Oil Co. 9 Morse-Adams, Sec. 3, Blk. 26, H.&G.N. Sur., 36 bbl., pumping, pay 2,510-2,620 ft., T.D. 2,739 ft.
Oklahoma State Oil Co. 2 Gethings, Sec. 14, Blk. A-9, H.&G.N. Sur., 18 bbl., pumping, 720-qt. shot 2,760-2,840 ft., T.D. 2,848 ft.
Skelly 6 Taylor, Sec. 24, Blk. B-2, H.&G.N. Sur., 109 bbl., pumping, 570-qt. shot 2,925-3,030 ft.
Stanolind 5-A Lovett, Sec. 36, Blk. B-2, H.&G.N. Sur., 432 bbl., pumping, 290-qt. shot 2,934-3,032 ft., T.D. 3,034 ft.
Hutchinson County: Danube Oil Co. 10-A Sanford, Sec. 78, Blk. 46, H.&T.C. Sur., 179 bbl., pumping, 2,000 gal. acid 2,685-2,700 ft., T.D. 2,709 ft.
Phillips 7 Timms, Sec. 21, Blk. M-21, T.C. Sur., 259 bbl., pumping, 490-qt. shot 2,972-3,170 ft.
Shell 2 Terry, Sec. 15, Blk. M-21, T.C. Sur., 165 bbl., pumping, 180-qt. shot 2,994-3,063 ft.
Sinclair 15 Weatherly, Sec. 23, Blk. Y, A.&B. Sur., 189 bbl., pumping, pay 3,047-73 ft., T.D. 3,116 ft.
Texas 13 Moore, Sec. 10, Blk. 3, B.S.&F. Sur., 88 bbl., pumping, 287-qt. shot 3,039-89 ft., T.D. 3,095 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

(Reported week ending December 20)

(Five oil wells were completed. Details will be published in the January 1 issue.)

NORTH CENTRAL TEXAS

Ellenburger Lime Production At K.M.A Gets Mile Extension

By D. H. STORMONT

WICHITA FALLS, Tex.—The K.M.A. field of southern Wichita and northern Archer County, the most active field in North Texas, may see even more activity as a result of a 1-mile-east extension of Ellenburger lime oil production. The extension well. Tide Water Associated Oil Co. 1-E Mangold, Block 38, Castleman Survey, southwest Wichita County, was completed for 104 bbl. of oil in 3 hours through a ¾-in. choke on tubing. The Ellenburger lime was topped at 4,190 ft. and the hole bottomed at 4,281 ft. Operator treated the section with 3,000 gal. of acid.

No. 1-E Mangold is surrounded by wells which produce from the regular 3,900-ft. K.M.A. sand. Nearest Ellenburger production is 1 mile west at Buffalo Oil Co. 4-E W. P. Ferguson, which was previously believed to limit production on the east side. An Ellenburger producer in this area will undoubtedly bring about a revival of drilling to the lime-pay zone in this part of the field as well as open considerable new territory for exploration.

Ellenburger Production Indicated for Clay County

First Ellenburger lime oil production for Clay County was indicated this week at Superior 1-A Scaling, Block 2, H.T.&B. Survey, 3 miles south of Halsell. No. 1-A Scaling has been drilled as a tight wildcat, but reports from the field credit the test with flowing oil and water after an acid treatment.

The wildcat was drilled to 5,865 ft. and operator set 7-in. casing on top of the Ellenburger lime topped at 5,810 ft. Plug was drilled and the test swabbed, recovering a slight show of oil. Operator then treated the wildcat with 6,000 gal. of acid, presumably in the Ellenburger section, after which it kicked off to flow oil and acid water into pits. At last report, 1-A Scaling was being connected to storage for a test.

If the wildcat is completed as an Ellenburger lime oil producer, it will be the first Ellenburger pool for the county and will open considerable territory to Ellenburger exploration, which, up to the present time, has not had a deep test. No Ellenburger production is found within a radius of approximately 40 miles.

Three Deep Wildcats Staked

Exploration in the Fort Worth basin was augmented this week by the location of three deep tests in the district. Two of the wildcats will be drilled to 7,200 ft. and both have been located in Montague County. The third test has been staked in Archer County and will go to 6,000 ft.

Both of the Montague County wildcats will be drilled by Sinclair Prairie. The firm has staked location for 1 I. M. Jones 467 ft. from the north and 1,400 ft. from the west lines of the I. Singletary Survey, Abstract 70, 1 mile northeast of Forestburg. This location places the wildcat 3 miles southwest of Seitz, Comegys & Seitz 1 Harris, which was drilled to 6,936 ft. before being plugged. No. 1 Harris failed to find a show, although it was believed to have had good structural position.

Sinclair Prairie will drill its second 7,200-ft. wildcat in the extreme southern part of Montague County at 1 C. R. Henderson, 467 ft. northeast and southeast of the south corner of the J. M. Hodges Survey, Abstract 964, but in the W. E. Martin Survey, 2½ miles east of Denver. No. 1 Henderson is 3¼ miles south of J. G. Hammond, Inc., 1 Zester, which had an oil show in the conglomerate just under the Nocona lime section at 6,423-41 ft. However, a drill-stem test of the section failed to recover a showing of oil. No. 1 Zester topped the Mississippi lime at 7,164 ft. and was plugged at 7,176 ft.

In Archer County, Continental has staked location on a 2,250-acre block for a 6,000-ft. wildcat. The test will be 1 W. M. Coleman, spotted 467 ft. from the south and west lines of Block 6, Coleman subdivision, Brazos C.S.L. Survey, 5 miles north of Scotland.

NORTH TEXAS COMPLETIONS

Wildcats

Jack County: Magnolia 1 Z. H. Borden, W. K. Smith Sur., A-547, top Caddo 5,496 ft., top Ellenburger 6,873 ft., dry at 7,048 ft.

Montague County: Continental 1 A. R. Winder, Sec. 4, Limestone C.S.L. Sur., 135 bbl. in 6 hr., ¼-in. choke, est. 400 bbl., 2,000 gal. acid 6,233-41 ft., top Caddo 6,039 ft., top Mississippi 6,504 ft., T.D. 6 610 ft.

Throckmorton County: Fain & McGaha and Bridwell Oil Co. 1 T. G. Hendrix, Sec. 104, J. Mathews Sur., A-936, dry at 2,762 ft.

Fields

Antelope, Clay County: Shell 19 Henderson, Sec. 2605, T.E.&L. Sur., 35 bbl. in 8 hr., est. 85 bbl., pay 3,154-3,206 ft.

Shell 4 J. G. Mullen, Sec. 2604, T.E.&L. Sur., 102 bbl. in 8 hr., est. 250 bbl., pay 3,205-15 ft.

Bryson, Jack County: Panhandle Ref. Co. 2-A D. F. Shoun, M. Mabin Sur., A-416, 62 bbl. in 2 hr., est. 400 bbl., pay 3,045-56 ft., T.D. 3,069 ft.

Briar Creek, Young County: Mudge Oil Co. 9 W. B. Harrison, F. Jaime Sur., 30 bbl. oil and 30 bbl. water, pumping, top Palo Pinto 1,520 ft., pay 2,745-52 ft.

Cooke, Cooke County: Trumter Pet. Corp. 13-B C. E. Stacey, J. Clark Sur., A-194, 25 bbl., pumping, pay 766-73 ft.

C. B. Christie 4 Felderhoff, Sec. 18, George Ivy Sur., A-516, 20 bbl., pumping, pay 754-69 ft., T.D. 779 ft.

K.M.A., Wichita County: Shell and Phillips 19-A D. R. Preston, Sec. 20, Blk. 7, H.&T.C. Sur., 43 bbl. in 3 hr., est. 225 bbl., 160-qt. shot 3,910-4,000 ft., top K.M.A. 3,810 ft.

Tide Water and Perkins & Cullum 13 W. P. Ferguson, Sec. 3, W. H. Spillers Sur., A-257, 109 bbl. in 3 hr., est. 250 bbl., top Caddo 3,882 ft., top Ellenburger 4,270 ft., pay 4,270-4,353 ft.

Nocona, Montague County: J. M. Crow 1 E. J. Bauldin estate, C. Chacon Sur., A-146, dry at 1,630 ft.

Voth, Cooke County: High Point Oil Co. 8 C. J. Fette, J. L. Townley Sur., 11 bbl., pumping, pay 1,091-1,113 ft., T.D. 1,120 ft.

Miscellaneous Fields

Archer County: Shell 4-G Dickey Coleman, Sec. 74, Lot 2, A.T.N.C.L. Sur., 214 bbl. in 6 hr., est. 475 bbl., acid 5,270-90 ft., Caddo 5,191 ft., T.D. 5,316 ft.

Metzner & Alford 1 W. H. Portwood, Sec. 1587, T.E. &L. Sur., 6 bbl. in 24 hr., pumping, pay 1,340-1,400 ft., T.D. 1,505 ft.

Clay County: Stalev 6 E. H. Hamilton, Sec. 83, Byers Bros. subd., 65 bbl., pumping, pay 1,111-30 ft.

Bobby Burns 9 E. H. Hamilton, Sec. 83, Byers Bros. subd., dry at 1,358 ft.

Perkins & Cullum 7-B C. T. Taylor, Sec. 42, Bacon's subd., 19 bbl. in 3 hr., pumping, est. 80 bbl., pay 1,064-76 ft.

Akin, Dimock & Costley 3-A J. C. Saner, Sec. 5, W. Wyatt Sur., 45 bbl., pumping, pay 1,108-21 ft.

Akin, Dimock & Costley 4-A J. C. Saner, Sec. 1, G.C. &S.F. Sur., A-794, dry at 1,133 ft.

Johnson & Kouri 10 C. T. Taylor, Sec. 56, Bacon's subd., 20 bbl., pumping, pay 1,116-40 ft.

F. H. Gohlke 1 G. W. Byers & Co., Sec. 30, Byers Bros. subd., 18 bbl. oil and 2 bbl. water, pumping, pay 1,758-76 ft.

Cooke County: Sinclair 14 S. L. Ramsey estate, C. Furinash Sur., A-369, 81 bbl. in 10 hr., est. 160 bbl., pay 4,816-43 ft., T.D. 4,845 ft.

Jack County: E. E. Reynolds 3 C. C. Henderson, J. B. Irvine Sur., A-312, dry at 364 ft.

Elmore Oil Corp. 1 George Meyers, S.P. Sur., A-1592, 98 bbl. in 6 hr., est. 200 bbl., pay 2,350-62 ft.

Montague County: United Producers Co. 4 D. H. Bramon, G. R. Jaques Sur., A-393, 31 bbl. in 1 hr., est. 300 bbl., pay 3,697-3,765 ft., T.D. 3,780 ft.

Sinclair 1 E. M. Hobbs, Sec. 170, J. Olabarri Sur., 108 bbl., pumping, acid 5,945-61 ft., T.D. 5,996 ft.

Wichita County: G. A. Alexander 1 J. D. Cooper, Sec. 3, Henry Hastie Sur., A-92, dry at 1,350 ft.

J. W. Hastings 1 L. F. Ramming, H. Hastie Sur., A-92, 18 bbl., pumping, pay 1,215-24 ft.

Petroleum Inv. Co. 10-C L. P. Douglas, Sec. 24, Lot 1, H.&G.N. Sur., A-399, 4 bbl., pumping, pay 785-807 ft., T.D. 809 ft.

S. H. Walton 25 R. J. Coleman, Sec. 23, Lot 1, H.& G.N. Sur., A-141, 9 bbl., pumping, pay 362-82 ft., T.D. 402 ft.

Apple & Brandeberry 7-B Grace Jennings, Sec. 12, H.&T.B. Sur., A-473, 11 bbl., pumping, shot 1,580-94 ft., T.D. 1,604 ft.

C. F. Schramm 4 Albert Daume, Sec. 1, S.P. Sur., dry at 703 ft.

Young County: Paul Atcheley 1 Henry Koester, H. B. Akles Sur., A-5, dry at 1,080 ft.

Pemeta Oil Co. 16 S. M. J. Benson, Sec. 1451, T.E. &L. Sur., 9 bbl., pumping, pay 865-80 ft., top Gunsight 854 ft.

Sid Wink 1 T. J. Routon, Sec. 265, T.E.&L. Sur., dry at 719 ft.

Kerlvn Oil and Phillips 1-A W. P. Stephens, Sec. 1946, T.E.&L. Sur., dry at 350 ft.

Kerlvn Oil and Phillips 1 G. M. McClure, Sec. 1952, T.E.&L. Sur., 104 bbl. in 4 hr., est. 450 bbl., acid 4,049-59 ft., top Caddo 4,010 ft., T.D. 4,125 ft.

J. N. McGirl 1-A W. P. Fisher, Sec. 455, T.E.&L. Sur., dry at 2,650 ft.

Miscellaneous Fields

(Reported week ending December 20)

Archer County: W. R. Stafford 1 J. T. Richardson, W. C. McCune Sur. A-943, dry at 1,270 ft.

Metzner & Lewis 3 N. I. Andrews, Sec. 29, G. C. Frarley Sur. A-129, 10 bbl., pumping, top Gunsight 966 ft., pay 966-78 ft.

Rathke Oil Co. 3 G. H. Roach, Sec. 1595, T.E.&L. Sur., 10 bbl., pumping, pay 1,278-90 ft.

Clay County: Johnson & Kouri 9 C. T. Taylor, Sec. 56, Bacon's subdiv., 40 bbl., pumping, pay 1,126-41 ft.

Perkins & Cullum 6-B C. T. Taylor, Sec. 42, Bacon's subdiv., 50 bbl., pumping, pay 1,047-52 ft., T.D. 1,058 ft.

Birdwell Oil Co. 13 R.E.L. Saner, Sec. 1, G.C.&S.F. Sur. A-704, 20 bbl. pumping, pay 1,101-39 ft.

George W. Graham 1 O. T. Roach, Sec. 4, Thornberry subdiv., dry at 1,301 ft.

Webb & Taylor Drlg. Co. 1 Waggoner, Sec. 32, Byers subdiv., dry at 1,806 ft.

Fisher & Kahn 5 C. T. Taylor, W. Richardson Sur. A-1032, 80 bbl., pumping, pay 1,134-40 ft.

Fisher & Kahn 6 C. T. Taylor, W. Richardson Sur. A-1032, 90 bbl., pumping, pay 1,134-40 ft.

Johnson & Kouri 1-D C. T. Taylor, Sec. 54, Bacon's subdiv., dry at 1,384 ft.

Cooke County: E. L. Wilson 1 Biffle, Marshall University Sur. A-620, dry at 1,466 ft.

Montague County: Lesh & McCall 1 C. L. Davenport, J. Fitch Sur., est. 125 bbl., pay 2,485-2,506 ft.

Wichita County: Magnolia 29 Hugh Reilly, L. C. Denison Sur. A-55, 10 bbl., pumping, pay 1,283-1,309 ft., T.D. 1,315 ft., old well drilled deeper.

Gray & Palmer Drlg. Co. 1 L. P. Douglas, Blk. 11, H.&T.B. Sur., dry at 1,708 ft.

C. E. Morrison 2 J. L. Powell, Sec. 21, H.&G.N. Sur. A-142, 10 bbl., pumping, pay 789-801 ft.

Culbertson 87 J. & J. Waggoner, Sec. 13, B.S.&F. Sur., A-394, dry at 699 ft.

Young County: Kimmell, Lee & Palmer 1 W. B. Bryan, Sec. 1367, T.E.&L. Sur., dry at 964 ft.

Rancho Oil Co. 1 E. Taylor, Sec. 2, B.S.&F. Sur., est. 350 bbl., acid 3,370-85 ft., T.D. 4,299 ft.

Bernson & O'Rourke 5 Mary Harlon, Sec. 1972, T.E.&L. Sur., 48 bbl. through ⅛-in. choke, shot 3,040-49 ft., T.D. 3,214 ft.

WEST CENTRAL TEXAS

FORT WORTH, Tex.—Activity in the West Central Texas district has, for the past 2 weeks, been confined to the location of new wildcat tests. Last week four new locations were announced for the district, while two locations were staked this week. This brings to a total of 31 the number of wildcats now in the actual process of drilling.

Jones County, one of the most active areas in West Central Texas since the Wimberly discovery, has received a new wildcat location. In the eastern part of the county, 2 miles north of Nugent, Beacon Oil & Refining Co. has marked location for 1 R. R. Reynolds, 275 ft. from the north and east lines of the south 72 acres of a 240-acre tract in Section 3, C.&M. Survey. No. 1 Reynolds will be drilled to contract depth of 2,600 ft.

A 2,600-ft. wildcat test will also be drilled in Eastland County. Early in the week Kent & Preston staked location for 1 fee. The wildcat will be 920 ft. from the west and 170 ft. from the south lines of a 15-acre tract in the W. P. Tindall Survey and 3½ miles south of the town of Carbon.

(Continued on Page 78)

ONE GALLON PROTECTS
2500' of 7" CASING
AGAINST COLLAR LEAKS

This crew is saving a lot of money and trouble—now, and in the future. They're treating the threads of every joint of casing as it is made up to go in the hole. The result is their assurance against leaky casing collars indefinitely. This small investment pays big dividends by keeping pressures off the surface pipe, and preventing loss of oil through seepage into upper sands. It's the safe, modern method of running pipe.

Buy RECTORSEAL in handy container sizes, from your SUPPLY COMPANY . . . and insist on RECTORSEAL—not just a "seal."

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THE POSITIVE LEAK PREVENTER

"WEIGHT INDICATOR POINTS"

PORTABLE MUD PUMP GAUGES have to take more pounding than a bargain-basement customer on dollar day, what with violent pump pulsations, vibrations, high pressures and all.

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And yet this laboratory-accurate gauge has ample oil field ruggedness for years of trouble-free service on well after well!

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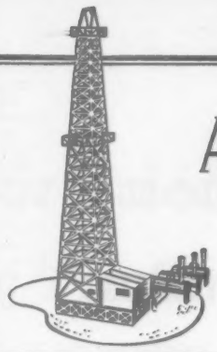


Among the Drilling

Dry-Hole Drilling Held No Relief From Provisions of Wage-Hour Act

OIL DRILLING OPERATIONS which result in "dry holes," as well as drilling which brings in wells, are subject to the Fair Labor Standards Act, and employes engaged in such operations, unless specifically exempted, are entitled to the minimum wage and overtime benefits of the law.

This position of the Wage and Hour Division, U. S. Department of Labor, is upheld, Baird Snyder, acting administrator of the division, maintains, in the opinion just handed down by the U. S. Circuit Court of Appeals for the Fifth Circuit at New Orleans, La.

The Appeals Court opinion, which reverses the decision of Judge James C. Wilson in U. S. District Court for the Northern District of Texas, at Fort Worth, grants a verdict for overtime pay for O. V. Hall and other employes against the Warren-Bradshaw Drilling Co.

"The end result of oil drilling operations is not necessarily of importance in determining applicability of the wage-hour law to employes so engaged," Mr. Snyder said. "The fact that a drilling job results in a 'dry hole,' therefore, does not relieve an employer from the responsibility of paying his employes at least 30 cents per hour and time and a half of their regular hourly rate for work beyond 40 hours per workweek."

Mr. Snyder cited that portion of the Appeals Court opinion which held that members of the rotary-drilling-rig crew involved in the suit "were certainly engaged in processes or occupations necessary to the production of oil. In the practical operation of the oil business, no one would accept the view that rotary drilling is not a part of the production of oil and that rotary-drilling crews are not part of the field forces actually engaged in its production."

With specific reference to rotary-drilling operations, the Appeals Court opinion stated:

"It must be conceded that some operations in the oil business as a whole, and some even in preparation for production, are neither operations in the production of oil, nor processes or occupations necessary for the production thereof; and that an extreme construction of the act, bringing all operation in the oil industry under it, would produce a reductio ad absurdum.

"But this is no argument at all against the conclusion to be drawn here from the undisputed fact that appellant and its employes are engaged generally in mining for and the production of oil in this state, and specifically in a process or occupation, the handling of a rotary-drilling equipment necessary to the production of oil here."

ROCKY MOUNTAIN Drilling Co., for the second time within 2 months, is moving one of its rigs from the Wyoming fields to California. One of their large power rigs was recently freighted from Casper and put into service in the new Raisin City field of the upper San Joaquin Valley where the firm is drilling under contract for Barnsdall Oil Co. Destination of the second Wyoming rig to arrive in California is as yet unknown, but it will begin service shortly, thereby raising to seven the number of rigs the firm will have in operation in California. Two months ago Rocky Mountain Drilling Co. purchased a new large power rig which has been constantly in use in the Newhall area, and even more recently the firm rented two rigs, one of which is in use in the Santa Maria field.

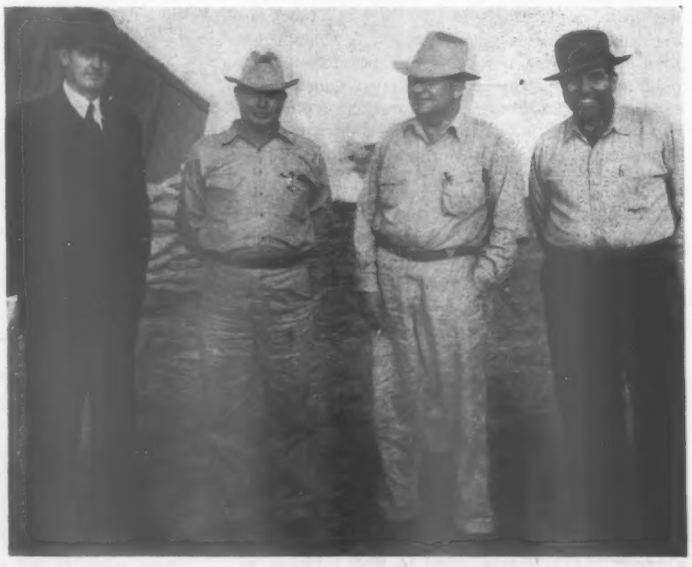
HALL-BAKER Co. of Los Angeles, Calif., has contracted to drill a well for H. C. Morton, independent operator, in the Devil's Den field near Bakersfield.

CARPER Drilling Co., Midland, Tex., has moved tools to the new North Grayburg pool in Eddy County, New Mexico, where it will drill 1 Tellyer-State, 36-16s-30e.

GEORGE P. LIVERMORE, Lubbock, Tex., contractor and operator, has agreed to drill a 6,500-ft. wildcat test 7 miles south of Wolfforth in extreme southwestern Lubbock County, Texas. Location has been staked on the R. D. Moxley ranch in the SW cor. Section 64, Block 20, H.E.&W.T. Survey.

J. T. O'NEAL Drilling Co., Midland, Tex., will drill a 5,200-ft. test north of the Duggan-Slaughter field area, Cochran County, Texas. The test will be 1 Della Slaughter Wright, staked 1,473 ft. from the east and 1,165 ft. from the south lines of Labor 14, League 61, Martin County school land survey.

DELTA Drilling Co., Tyler, Tex., has completed building derrick for 1 Jim Walton on the north flank of



Picture taken at La Gloria field, in Southwest Texas. The men are John A. Chapman, vice president, Grey Wolf Drilling Co.; John Archer, drilling superintendent for Grey Wolf Drilling Co.; Jess Ballinger, superintendent of Operators' Committee, and Kenneth Grisson, driller

Contractors

FALCON-SEABOARD Drilling Co., Houston, Tex., is preparing to test W. R. Davis Co., Inc., 1 Jackson-Harrison, a semiwildcat located northeast of the McAllen field, Hidalgo County, Texas. Casing was cemented at approximately 7,600 ft., after the well was drilled to a depth below 8,000 ft. In the meantime, two operations are reported in Louisiana, one being located in the Ville Platte field for Gulf Oil Corp., and one in La Salle Parish, where a wildcat is being drilled for Sinclair Prairie Oil Co.

FAIN Drilling Co., Houston, Tex., has reached a depth of 11,784 ft. in Stanolind 1 McWhorter, located in the Lake Creek field, Montgomery County, Texas. In the Refugio field, Refugio County, Texas, Sunray Oil Co. 4 Mitchell has been completed as a producer, while in the Rincon field, Starr County, Texas, four rotaries are running for Continental Oil Co.

BREWSTER-BARTLE Drilling Co., Houston, Tex., has started drilling operations on a wildcat located near the town of Palestine in Anderson County, Texas, for the Navarro Oil Co., while in the Hawkins field, Wood County, Texas, another rotary is running for the same company. In the Gulf Coast area and located near the Pledger field, one rig is running for the Union Producing Co.

D. L. TISSUE Drilling Co., Houston, Tex., has one rotary running in the north extension area of the Conroe field, Montgomery County, Texas, while near the town of Hallettsville, Lavaca County, Texas, John Mayo et al 1 Rother is drilling below 7,513 ft. after topping the Wilcox at approximately 7,449 ft.

ROWAN & HOPE, San Antonio, Tex., started drilling operations on their 1 Rose, a wildcat located 4 miles northeast of the La Reforma field in northwestern Hidalgo County, Texas.

ALLEN & MORRIS, San Antonio, Tex., have reached a depth below 6,300 ft. in Tom Slick, Jr., 1 Grissom, a projected Wilcox test located 1 mile south of the Caesar field, Bee County, Texas.

PARKER Drilling Co. is under way with its 1 Walker, in the West Clay City pool in Clay County, Illinois. The test is located in W½ SW SW 27-3n-5e, southwest of Cameron Oil Co. 1 Hendy.

OLSON Drilling Co. has started wildcat exploration with its 1 Boyd. W½ SW SW 1-3n-10e, 1 mile east of the southeast corner of the town of Olney, Richmond County, Illinois.

OIL WELL Drilling Co. 1 Johnson, 48-44-1s, T.&P. Survey, between the Harper and Goldsmith pools in Ector County, West Texas, which went to 4,510 ft. and set casing, was unable to lower salt water below 3,200 ft. from bottom. Operators have plugged back to 4,270 ft.

GLOBE Drilling Co., Mount Pleasant, Mich., has freed a string of tools used in drilling 1 Banks, SE SE SE Section 4, in the Muskrat Lake field, Bloomingdale Township Van Buren County, Michigan.

MUSKEGON Development Co., Muskegon, Mich., has two contracts for wells in Allegan and Bay counties, Michigan. In Allegan County, Muskegon has assigned tools to location for Regal Dutch Petroleum 2 Wamhoff, NW NW NE 18-3n-12w. Location assigned to Muskegon in Bay County is for Chapman Oil Co 2 Duso, C N½ NE NE 34-15n-3w.

ASHBY Drilling Co., formed recently by a division of equipment and territory of Twin Drilling Co., has two contracts in Michigan, both for Taggart Brothers Co. Ashby will drill Taggart 33 Roberts-Johnson-Howe in 7-18n-10w, Osceola County, and the same operators' 34 Kent in 18-18n-10w, also in Osceola County.

DALLMEYER & BREWER, Saginaw, Mich., have taken contract to drill Associated Petroleum Co. and Southwest Development Co. 1 Amy M. Blackmer, NE SE NE 15-8n-14w, Ottawa County, Michigan.

A. A. BUCHANAN has received contract from Plymouth Oil Co. for the drilling of 1 J. J. Kuck, new 6,000-ft. wildcat for Jim Wells County, Texas, in Section 6, about 1½ miles east of Orange Grove.

RUSSELL COOPER, Mount Pleasant, Mich., has contract for Earl G. Hartman 1 Treend, NE NE NW 12-1s-14w, Van Buren County, Michigan, and is now moving tools to location.

PARKER Drilling Co., Tulsa, has completed Continental Oil Co.'s first production test in Michigan for 4,000,000 cu. ft. of gas per day from top of the Traverse. The operation is on the Turner farm, NE SE NE 15-3s-4w, Calhoun County, Michigan. The operating company expects soon to start another deep test in the same vicinity. Originally, Continental intended to drill 1 Turner to 5,000 ft. if necessary in order to test the St. Peter. Completion in the shallow gas pay was ordered to obtain an economical fuel supply for further exploration.

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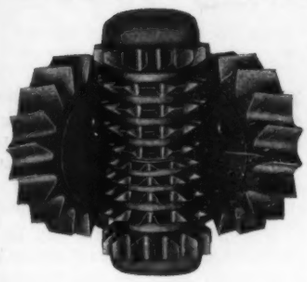

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Leon County Wildcat Runs High on Pecan Gap

By D. H. STORMONT

DALLAS, Tex., Dec. 29.—Preparations to core for the Woodbine sand were being made by H. L. Hunt at 1 J. S. Weekly, Staley Survey, Leon County wildcat. The test has been drilled to a reported depth of 5,747 ft. and will core below that depth. Operator is drilling the wildcat as a closed operation, but the top of the Pecan Gap chalk, which was released, places 1 Weekly higher structurally than the old Bateman-Carlye failure about 1 mile east. The Pecan Gap was topped at 3,669 ft., and with an elevation of 406 ft., 1 Weekly is approximately 250 ft. higher on the marker than the Bateman test.

Three Wildcats Staked

Three wildcat tests were staked in the district during the week. Two of these will test unexplored territory while the third will be drilled in an area surrounding a prospective Paluxy sand discovery.

Permission to drill a wildcat in Van Zandt County was issued to O. F. Wencker, who has been planning a test for some time. The wildcat will be drilled as 1 Continental Assurance Co., R. C. Morris Survey, 467 ft. from the north and northeast lines of a 148-acre tract in the survey. It is situated on a spread of leases assembled several months ago between Wills Point and Edgewood. The wildcat is expected to test the Woodbine sand.

In Robertson County, W. H. Doran has staked location for 1 W. C. Anderson. The wildcat test will be drilled 467 ft. from the south and east lines of Block 60, Leston Purdy Survey. Contract depth was not announced.

A semiwildcat is in prospect for the Brithright area of northern Hopkins County. W. B. Hinton and the Talco Asphalt & Refining Co. have announced the location of 1 Jeff Crisp, located in the southeast corner of the south 40 acres of a 136-acre tract in the Acquier Survey. The test is ½ mile east of the operators' 1 Long, which is indicating the opening of a Paluxy sand pool by making 80 bbl. of fluid daily, of which 10 to 12 bbl. is oil and the remainder water, from 4,750 ft. The area is west of the Sulphur Bluff pool.

EAST TEXAS COMPLETIONS

Wildcats

Camp County (semiwildcat): Talco Asphalt Ref. Co. 1 J. F. McKenzie, L. Williams Sur., 2 mi. E of Leesburg, 98 bbl. in 24 hr., T.D. 8,203 ft.

Wood County: J. C. Moore 1 G. A. Green, J. M. Caudle Sur., 10 mi. NW of Hawkins, dry at 5,555 ft., top Austin 5,345 ft.

Nacogdoches County: B. D. K. Oil Co. 1 R. W. Wilson, J. I. Y'Barbor, dry at 3,445 ft.

Fields

Cayuga, Anderson County: Carter & Gragg Oil Co. 1 Rayall & Cone, T. Brestow Sur., 180 bbl., T.D. 4,080 ft.

Grapeland, Houston County: Lone Star 2 Herrod & Finch, J. D. J. Procilla Sur., 115,000,000 cu. ft. gas, T.D. 5,929 ft.

Hawkins, Wood County: Brocken Oil Co. 1 B. A. Wells, G. Brewer Sur., 129 bbl. in 6 hr., top Austin 4,104 ft., top Woodbine 3,899 ft., pay 4,532-4,692 ft., T.D. 4,811 ft.

Humble 1-B W. S. Shamburger, J. McAnulty Sur., 151 bbl., top Austin 4,455 ft., top Woodbine 4,768 ft., pay 4,889-4,921 ft.

Humble 3 Floy K. Williams, J. P. Moseley Sur., 110 bbl. in 6 hr., top Austin 4,143 ft., top Woodbine 4,402 ft., pay 4,509-4,699 ft., T.D. 4,837 ft.

C. H. Lyons 1 T. H. Boyd, J. G. Heard Sur., 74 bbl. in 6 hr., pay 4,673-4,754 ft., T.D. 4,768 ft.

Texas 2 R. F. Green, J. B. Crain Sur., 107 bbl. in 6 hr., top Austin 4,312 ft., top Woodbine 4,576 ft., pay 4,730-4,805 ft., T.D. 4,882 ft.

C. L. McMahon 4 L. H. Snider, J. P. Moseley Sur., 109 bbl. in 8 hr., pay 4,606-4,800 ft., T.D. 4,838 ft.

Long Lake, Anderson County: Texas 4 W. P. B. Woodhouse, S. Sanches Sur., dry at 5,320 ft.

Pleasant Grove, Rusk County: L. O. McMillian 1 Ashby, George May Sur., 142 bbl. oil and 300 bbl. water in 24 hr., pumping, pay 4,046-86 ft.

EAST TEXAS ACTIVE WILDCATS

Freestone County: O. B. Perot 1 Coleman, H. Howard Sur., 2½ mi. SW Streetman, preparing to reperforate and test, T.D. 3,506 ft.

Hopkins County: W. B. Hinton & Talco Asphalt & Ref. 1 S. M. Long, 4,000 ft. from E and 650 ft. from S lines W. Acquier Sur., testing, T.D. 4,895 ft.

Houston County: C. P. Culmore 1 G. T. Lundy, John Forbes Sur., 1½ mi. SE Lovelady, 467 ft. out of SE cor. of NE 40 acres of 310-acre tract, testing, T.D. 5,016 ft.

Leon County: Placid Oil Co. 1 J. S. Weekly, C. C. Stealy Sur., 3½ mi. NW Jewett, 1,786 ft. from N and 467 ft. from W lines of sur., 310-acre tract, drilling 5,041 ft.

Limestone County: Zephyr Oil Co. 1 Barron, 337 ft. from NW and 300 ft. from SW lines E. Mabry Sur., drilling 5,545 ft.

McLennan County: McLennan County 1 U. S. Government, J. Walker Sur., 4 mi. N of Waco, drilling 1,850 ft.

C. G. Warren 1 Mary Dyer, George Green Sur., 3 mi. NW Crawford, 200 ft. from SW and 375 ft. from NW lines of 310-acre tract, S.D. 800 ft.

Navarro County: J. R. Bunn 1 L. C. Cocke, J. White Sur., 1,200 ft. from SW of SW cor. of G. A. Rakestrow 120-acre tract, approximately 7,100 ft. from NW and 1,200 ft. from NE lines John White Sur., drilling 150 ft.

Rains County: E. B. Germany 1 J. L. Collins, Joel Horn Sur., 1½ mi. NE of Emory, 467 ft. from S and W lines of 68-acre tract, drilling 3,167 ft.

Rusk County: O. W. Killiam 1 D. R. Richardson, J. I. Sanches Sur., 2½ mi. N of New Salem, 467 ft. from N and W lines 240-acre tract, drilling 3,080 ft.

Smith County: Ryan Consolidated 1 D. S. Wright, J. M. Gracia Sur., 10 mi. SE Mineola, 1,680 ft. from N and W lines Edgar Pollett Sur., drilling 5,011 ft.

West Central Texas Fields

(Continued from Page 75)

Completion Announced for Stephens County Wildcat

The Stephens County wildcat drilled by T. G. Shaw at 1 Whalen, Section 1088, T.E.&L. Survey, was completed at the end of the week as a gas producer. On official gage 1 Whalen flowed an estimated 10,000,000 cu. ft. of gas daily from the Lake sand at 4,078-95 ft.

The test was plugged back from 4,708 ft. in the Ellenburger lime which it found dry. No. 1 Whalen is located 3½ miles southwest of the Stroud pool and about 7 miles north of the 4,000-ft. Corbett area.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Callahan County: W. B. Schooler 1-A Belcher estate, Sec. 7, S.P. Sur., Blk. 6, dry at 2,004 ft.

Coleman County: West Coast Pet. Corp. 1 J. A. Norris, J. Greenwood Sur. 304, dry at 3,265 ft.

Concho County: C. M. Joiner 1 G. R. Armor, Sec. 105, T.&N.O. Sur., Blk. 72, dry at 3,420 ft.

Fields

Akard, Jones County: D. H. Bolin 1 Dorthy Akard, Gaudalupe Martinez Sur. 137, dry at 2,165 ft.

Bluff Creek, Jones County: Baker & Pardue 7 J. P. Morris, Sec. 200, E.T. Sur., dry at 1,651 ft.

Roeser & Pendleton, Inc., and Humble 5 J. P. Morris estate, Sec. 205, E.T. Sur., 103 bbl., pumping, shot 1,574-79 ft., T.D. 1,583 ft.

Brooks, Stephens County: A. W. Campbell 1 W. E. Pruett, Sec. 37, T.&P. Sur., Blk. 7, dry at 3,658 ft., lost hole.

Crosscut, Brown County: C. L. Wann 5 E. W. Ardledge, Lot 1, Napoleon Mitchell Sur. 150, 5 bbl., pumping, pay 1,277-87 ft.

Cutbirth & Edington 1 M. J. Suttles, Robert Mitchell Sur. 140, 7 bbl., pumping, pay 1,150-70 ft., T.D. 1,174 ft.

Dunigan, Taylor County: Dunigan Bros. 3 A. W. Hunter, Lot 13, W. D. Willis Sur. 122, 20 bbl., pumping, shot 2,317-24 ft.

Sayles, Jones County: Condor Pet. Co. 36 Henry Sayles, Sec. 5, T.&P. Sur., Blk. 20, 134 bbl., pumping, pay 1,917-38 ft.

View, Taylor County: Tal-Vez Oil Co. 1 D. T. Petree, Lot 12, Gaudalupe C.S.L. Sur. 120, 1,860,000 cu. ft. gas, acid 2,352-82 ft.

Wimberly, Jones County: H. Hines 3 A. M. Wimberly, Lot 87, Godwin subd. of De Witt C.S.L. Sur. 126, 156 bbl. in 8 hr., est. 400 bbl., pay 2,225-38 ft.

NORTH TEXAS ACTIVE WILDCATS

Archer County: Golding & Cochran 1 M. J. Kundel, 494 ft. from S and 750 ft. from W lines M. J. Kundel land in B.B.B.&C. Sur. A-54, cleaning out, T.D. 5,303 ft.

Sunray Oil Co. 1 Seabold, 560 ft. from E and 330 ft. from S lines L. P. Jones Sur. A-939, Ellenburger test, cleaning out, T.D. 5,049 ft.

Clay County: Continental 1 Spring, 200 ft. from N and 1,254 ft. from W lines Sec. 24, M. True Sur. A-1005, 6,500-ft. rotary test, swabbed 150 bbl. in 8 hr., testing, T.D. 5,630 ft.

Shell 1 Maddox, 2,272 ft. from N and 2,114 ft. from W lines Hughes Sur. A-179, 5,600-ft. rotary test, fishing pipe, T.D. 5,700 ft.

S. M. Seaberry & H. B. Duncan 1 Glenn Tucker, 2,130 ft. from W and 150 ft. from N lines of 753-acre tract C. F. Stanley Sur., 1,450-ft. rotary test, moving in material.

Superior Oil Co. 1 G. W. Scaling, 2,600 ft. from N and 1,200 ft. from W lines Sec. 2, H.&T.B. Sur. A-882, 6,000-ft. rotary test, waiting on cement, T.D. 5,865 ft.

Webb & Taylor Drilling Co. 1 T. T. Ryan, 500 ft. from N and 1,320 ft. from W lines Sec. 11, Byers Bros. subdiv., 1,300-ft. rotary test, waiting on cement, T.D. 1,218 ft.

Cooke County: John Gray 1 C. M. Greek, 330 ft. from S and E lines Willis Sur. A-1107, 3,000-ft. rotary test, waiting on cement, 30 ft.

Saulsbury Oil Co. 1 W. D. Rowland, 330 ft. from S and 547 ft. from W lines of NW cor. L. B. Ladlock Sur. A-1027, S.D. 3,006 ft., orders.

S. W. Simms 1 F. H. Dayton, 330 ft. from S and E lines of W 40 acres F. H. Dayton 246-acre tract, F. Godley Sur. A-293, 2,500-ft. rotary test, first report.

Hunt Oil Co. 1 F. W. Forrester, 467 ft. from S and W lines of Forrester farm, J. W. Chandler Sur. A-303, 5,000-ft. rotary test, first report.

Hunt Oil Co. 1 J. T. Jones, 4,300 ft. from S and 671 ft. from E lines J. Thomas Sur. A-1239, Ellenburger test, swabbing, T.D. 5,633 ft.

Denton County: Hunt Oil Co. 2 T. J. Jones, 3,350 ft. from E and 6,550 ft. from S lines J. Thomas Sur. A-1239, 3,300-ft. rotary test, drilling 2,085 ft.

Foard County: Bruce Sullivan 1 McCoy, 467 ft. from N and W lines J. M. Seaton Sur., conditioning hole, T.D. 6,019 ft.

Appalachian Fields

(Continued from Page 74)

17 L. Kidwell, dry, second Cow Run, T.D. 383 ft.

Clay district: W. C. Patterson 23 J. S. Swisher, 1 bbl., Big Injun, T.D. 1,208 ft.

Wood County, Williams district: E. C. Hartman and George D. Athey 1 Raymond C. Palmer, 2 bbl., 20,000 cu. ft. gas, Salt sand, T.D. 1,375 ft.

ORISKANY COMPLETIONS

Jackson County, Ravenswood district: West Virginia Gas 1 W. W. Custer et al 8,421,000 cu. ft. gas, top Corniferous lime 5,110 ft., Oriskany 5,228 ft., T.D. 5,235 ft.

McIntosh & Grim 1 H. F. Spears, 6,711,000 cu. ft. gas, R.P. 1,740 lb., Corniferous lime 5,060-5,177 ft., Oriskany 5,177 ft., gas 5,177-5,181 ft., T.D. 5,188 ft.

Ripley district: McIntosh & Grim 1 Wade E. Carson and Bessie E. Staats, 5,854,000 cu. ft. gas after shot, R.P. 1,710 lb., Corniferous lime 5,071-5,177 ft., Oriskany 5,177-5,201 ft., gas 5,184-5,201 ft., T.D. 5,201 ft.

United Carbon 1 Jessie Corbin et al, 1,892,000 cu. ft. gas after shot, Corniferous lime 5,087-5,187 ft., Oriskany 5,187-5,221 ft., gas 5,190-5,210 ft., T.D. 5,245 ft.

Washington district: Columbian Carbon 1 C. W. Starcher et al, 15,991,000 cu. ft. gas, R.P. 1,900 lb., Corniferous lime 4,970-5,078 ft., Oriskany 5,078 ft., gas 5,078-87 ft., T.D. 5,087 ft.

Kanawha County, Poca district: Godfrey L. Cabot, Inc. 5 Poca Coal Land Co., 152,000 cu. ft. gas after shot, R.P. 1,170 lb., Corniferous lime 4,945-5,029 ft., Oriskany 5,029 ft., T.D. 5,108 ft.

Godfrey L. Cabot 1 L. M. Pauley, 9,902,000 cu. ft. gas, R.P. 1,730 lb., Corniferous lime 5,110-5,254 ft., Oriskany 5,254 ft., T.D. 5,264 ft.

Lewis County, Freemans Creek district: Hope 1 Alfred Woofter, 500,000 cu. ft. gas, Corniferous lime 6,680 ft., Oriskany 6,940 ft., T.D. 7,325 ft.

(Reported week ending December 20)

Ripley district, Jackson County: Columbian 1 G. B. Young, Oriskany sand 5,048 ft., 239,000 cu. ft. gas, T.D. 5,088 ft.

United Carbon 961 J. O. Harpold, Oriskany sand 5,050 ft., 533,000 cu. ft. gas, T.D. 5,091 ft.

Poca district, Kanawha County: Poca Fork 1 Flavius Jones, Oriskany sand 5,238 ft., 5,700,000 cu. ft. gas, T.D. 5,324 ft.

ROCKY MOUNTAIN AREA

Lander Pool, Near Cut Bank, Extended Westward

By T. R. INGRAM

DENVER, Colo., Dec. 29.—Drilling operations, which generally slow down during the winter months in the Rocky Mountain area, were further curtailed the past week by wells shutting down for the holidays. The most important completion of the week was Santa Rita Oil & Gas Co. 15 Tribal, SW SE NE 3-35n-6w, on the west side of the Cut Bank field in Montana, a Sunburst sand well which swabbed 468 bbl. first 24 hours. It marks an extension of what is known locally as the Lander pool, and is a west offset to A. B. Cobb 1 Jeffries-Stufft, which was completed last month for 150 bbl. in a swabbing test. On the southeast side of the new well, Cobb, Jeffries, Texas 1 fee had only a show in the Sunburst and was a small well in the Cut Bank sand. This is an area which gives indications of being further extended westward.

Offset to Horne Valley Discovery Is Abandoned

Glen Swartout 3 Union Pacific, Horne Valley structure, Carbon County, Wyoming, failed to develop gas in the Muddy or Dakota and was abandoned. It is a west offset to Martin & Gaylor 1 Horne Brothers, the discovery well, completed in 1939 for 7,000,000 cu. ft. in the Muddy at 750-805 ft. Two wells to the north and northwest were dry holes, but the structure has not been tested to the east and southeast of the discovery.

Saturation Found in Two Eastern Colorado Wildcats

The two eastern Colorado wildcats are at critical stages. O. E. Terry 1 Whitson, in Cheyenne County, encountered saturation in lime at 4,810 ft. and was cored to 4,812 ft. when operations were suspended to run casing and standardize. It is located half a mile north of the Gulf test drilled several years ago which had a show at around this depth. Stanolind 1 Snell in Kiowa County is reported drilling at 5,251 ft., but nothing is given out as to what formations it is in and what has been encountered. It is very closely guarded and there is little known upon which reliable guesses can be made. It is believed, however, to be below the horizon in which this company made a discovery in the Patterson pool in Kearny County, Kansas.

Oregon Basin Leases Offered for Sale

The Oregon Basin field, Park County, one of the largest structures in Wyoming, in which development was resumed last year with the completion of three wells, and in which 10 wells so far have been drilled to the pay this year, is to have 921 acres of proven and semiproven acreage opened for drilling by the Department of the Interior. Leases on this acreage will be offered for sale on January 22 at the U. S. Land Office at Cheyenne, Wyo., under the provisions of Section 17 of the Oil Leasing Act of February 25, 1920, as amended by the Act of August 21, 1935. The royalty rate scale in the least form shown in Circular 1386 will prevail. The successful bidder must deposit one-fifth of his bid, and the remainder, with the annual rental of $1 an acre and a $5,000-bond furnished prior to issuing of the lease. The acreage is divided into seven parcels, of which six, comprising 880 acres, are on the south dome, and one of 40 acres on the north dome. Description is as follows:

Parcel	Description—	Acres
1.	N½ N½ 5-50n-100w	161.5
2.	W½ W½ 33-51n-100	160
3.	NE 32-51n-100	160
4.	SE 29-51n-100w	160
5.	SW NE and S½ NW 29-51n-100	120
6.	SE SW 30, E½ NW 31-51n-100w	120
7.	SE SE 7-51n-100w	40

Parcels 2, 3, 4 and 5 are all within area proven by wells drilled outside the withdrawal boundaries. Parcel 1 is south of a fault which traverses the structure. Parcel 6 is wildcat territory on the west side, and Parcel 7 is on the southwest edge of the north dome.

Ohio Oil Co. Withdraws From Kevin-Sunburst

The Ohio Oil Co. has served notice on producers in the Kevin-Sunburst field in Montana that affective January 1 it will withdraw as a purchaser in that field and will cease posting field prices. The Texas Co. is expected to take over most of the production heretofore purchased by the company.

COLORADO DRILLING REPORT

Cheyenne County: O. E. Terry 1 Whitson, NW NW SE 12-13s-49w, T.D. 4,812 ft., cored 2 ft. saturation 4,810-12 ft., then shut down to run casing and standardize.

Kiowa County: Stanolind 1 Snell C SE SW 7-20s-41w, reported drilling below 5,251 ft.

La Plata County: E. B. Klem 1 Olbert, NW SW 9-35n-12w, S.D. 4,290 ft. until spring, est. 20 ft. off Shinarump sand.

Nick Spatter 1-X Bryce, C SW SW 31-33n-9w, drilling 4,625 ft. bluish gray sandy slate, 5⅞-in. 2,800 ft.

Moffat County: Privett & Spangler 1 Stillings, NE SE SE 12-5n-96w, S.D. 2,300 ft. in shale for orders.

Rio Blanco County: Texas-California 10 Unit, NE SE SW 26-3n-96w, location, first report, Wilson Creek, outpost well east side midway between 1 Unit and 8 Unit.

Texas-California 8 Unit, NW SE NW 26-3n-94w, drilling 6,468 ft.

WYOMING COMPLETIONS

Horne Valley field, Carbon County: Glen Swartout 3 Union Pacific, NE NE SE 21-22n-78w, T.D. 1,030 ft., dry in the Muddy and Dakota, pulling casing to abandon.

WYOMING DRILLING REPORT

Big Horn County: Ohio Oil 3 Utah-Wyoming, Lot 57, 33-56n-97w, rigging up, going to Embar-Tensleep for gas.

Carbon County: Superior Oil 1 Brimmer, CWL NW NE 32-27n-89w, T.D. 1,889 ft., reaming to set 13⅜-in.

Sinclair-Wyoming 25-C East Ferris, SE SE NW 25-26n-87w, T.D. 3,994 ft., drilling by at 3,430 ft.

Continental 1 Johnson, SE SE SW 1-24n-88w, drilling 4,626 ft., red beds.

Sinclair-Wyoming 3-A Mahoney, C NW NE 34-26n-88w, drilling 3,190 ft.

Ohio Oil 3 Diamond Cattle, SW NE SE 27-20n-78w, drilling 1,340 ft.

Sinclair-Wyoming 1 Mary Carter, NE SE SE 31-25n-88w, drilling 4,415 ft.

Sinclair-Wyoming 25-A Wertz, NW SE SW 6-26n-89w, drilling 6,002 ft.

Sinclair-Wyoming 26-A Wertz, NW SE SE 1-26n-90w (Sweetwater County), T.D. 6,311 ft., laying down drill pipe.

Sinclair-Wyoming 27-A Wertz, CSL NW SW 6-26n-89w, drilling 4,888 ft.

Converse County: Harry Free 1 Jeffrys, SW SW SW 26-32n-69w, S.D. 1,750 ft., base White River 927 ft.

Fremont County: Superior Oil 1 Tribal, SW SE SW 15-3n-1w, drilling 3,290 ft., about 100 ft. above Muddy sand.

Continental 2 Shoshone Indian lease, SE NE SE 1-6n-3w, S.D. 267 ft. for repairs, tested 2 bbl. in 24 hr. at 190 ft.

Natrona County: General Petroleum 3-21-G, NW SW NW 21-35n-77w, coring in Shannon sand below 5,565 ft.

Niobrara County: Cow Gulch Oil 1 Nelson, C SE SW 19-35n-65w, S.D. 5,600 ft. for orders.

Park County: Continental 5 Northern Pacific, NW SE SE 23-58n-98w, drilling 2,988 ft. in red and black shale.

MONTANA COMPLETIONS

Cut Bank field, Glacier County: Texas-Miller 1 Morgan, 660 ft. S NE cor. 32-33n-5w, T.D. 3,002 ft., 7-in. 2,955 ft., Cut Bank sand 2,935-3,016 ft., main pay 2,994-3,016 ft., 1,700 ft. oil in hole, swabbed 169 bbl. first 24 hr.

Santa Rita Oil & Gas 15 Tribal, SW SE NE 3-35n-6w, T.D. 2,978 ft., 7-in. 2,950 ft., Sunburst sand 2,948-76 ft., red and green shale 2,975-78 ft., show gas 2,948-53 ft., show oil 2,953-60 ft., main pay 2,960-75 ft., swabbed 468 bbl. first 24 hr. (see lead).

William Hanlon 2 Tribal-196, SE NE NE 30-32n-5w, T.D. 2,856 ft., 8⅝-in. 2,784 ft., Sunburst and upper Cut Bank 2,782-2,835 ft., lower Cut Bank 2,835-49 ft., main pay 2,835-49 ft., 2,000 ft. oil in hole, swabbed 260 bbl. first 24 hr. Then shot and now cleaning out.

Texas 4-B Government, C SW SW 17-32n-5w, T.D. 2,987 ft., 7-in. 2,959 ft., no Sunburst sand, Cut Bank 2,920-76 ft., shale break 2,958-66 ft., main pay 2,966-76 ft., 1,200 ft. oil in hole, swabbed 65 bbl. first 9½ hr.

MONTANA DRILLING REPORT

Glacier County: Texas 4 Bonnet, CNL SW SW 8-32n-5w, cemented 7-in. 2,865 ft.

Texas 4-A Government, CWL SE SW 17-32n-5w, cemented 10¾-in. 444 ft., top Colorado 410 ft.

Santa Rita 3 Jacobson, C SE SW 7-33n-5w, cemented 10¾-in. 641 ft., top Colorado 620 ft.

Wm. Hanlon 3 Tribal-196, SW NW NE 30-32n-5w, rig on ground, first report.

Frances Oil 2 Tribal-201, CEL SE NE 30-32n-5w, rigging up, first report.

Texas 2 Miller, CWL NE NE 32-33n-5w, rig on ground, first report.

Toole County: Big West Oil 1 State, C NE 6-34n-4w, location, first report.

A. A. Oil 1 Fey, SW SE SE 32-37n-2e, drilling 1,185 ft., carrying 8¼-in.

J. H. Agen 18 Goeddertz, CSL NE SW 23-35n-3w, T.D. 875 ft., 10-in. 130 ft., running 8¼-in.

Barmac Production 15 Maughans, SW NE NE 30-35n-1w, T.D. 1,537 ft., show oil in Madison 1,521-30 ft., trying to cement off water to acid. in lime break.

Big West 2 Dahlquist, C SE 6-34n-4w, drilling 980 ft., 10-in. 220 ft.

Dakota-Montana Oil 26 Government, CNL NE NW 19-35n-1w, T.D. 1,562 ft., contact 1,559-62 ft., pumped 6 to 8 bbl. daily natural, will acid.

Nepstad-Montgomery Fargher 4 Haugen-2, CSL SW SW 2-35n-3w, T.D. 1,650 ft., rig burned, repairing.

R. G. Parrant 1 Davis, C SE SE 3-36n-3w, drilling 125 ft., and driving 10-in. through sandy formation.

Prevol & Shay 1 Government, CEL SW SW 11-35n-3w, drilling 810 ft., 10-in. 154 ft., first report.

Prevol & Shay 11 Waite, SE NE NE 24-35n-2w, location, first report.

Rimrock Oil 8 Schmidt, SE SE NW 29-35n-3w, T.D. 1,777 ft., contact 1,770-77 ft., 75 ft. in hole, will acid. later.

Welch Brothers 5 Zachor, CWL NW NE 29-35n-1w, T.D. 1,360 ft., cleaning out after shot.

NORTHEAST NEW MEXICO DRILLING REPORT

San Juan County: Southern Union Production 1 Ute Indian, NE NW 21-32n-14w, drilling 450 ft., 15½-in. cemented 410 ft.

George Goodrum 1 Reinhart, NE NE 21-29n-11w, drilling 510 ft.

San Miguel County: Southwest Drilling 1 Conchas, NW NE 34-17n-21e, drilling 3,688 ft.

Torrance County: Cardinal Oil 1 State, SE SW 3-8n-14e, drilling 1,144 ft., 6-in. 1,140 ft.

UTAH DRILLING REPORT

Summit County: Longwell Petroleum No. 1, SE SW SE 35-3n-5e, T.D. 4,038 ft., underreaming 4¾-in. to bottom.

Illinois Fields

(Continued from Page 72)

Ruwaldt et al 4 S. Lockwood, SW NW NW 23-6s-5e, dry at 3,309 ft.

Russellville, Lawrence County: G. Herlist 2 Lemons, SE SW NW 7-4n-10w, dry at 1,593 ft.

Simms, Wayne County: Swan-King 1 Dale Spence, W½ SE NE 28-1s-6e, pumped 210 bbl., McClosky 3,169 ft., T.D. 3,219 ft.

Bell Bros. 3 Fuhrer, E½ SW NW 33-1s-6e, pumped 256 bbl., Aux Vases sand 3,024 ft., T.D. 3,042 ft.

Walpole, Hamilton County: Texas 2 R. L. McGill, W½ NE SW 27-6s-6e, swabbed 117 bbl., Aux Vases sand 3,032 ft., T.D. 3,098 ft.

Texas 2 L. Shavitz, W½ SW NE 27-6s-6e, swabbed 178 bbl., Aux Vases 3,059 ft., T.D. 3,097 ft.

Woodlawn, Jefferson County: Magnolia 1 Oslager unit, SE SW NW 1-3s-1e, pumped 218 bbl., Benoist 1,923 ft., T.D. 1,955 ft.

Texas 1 A. Robinson, SW NW NE 1-3s-1e, swabbed 14 bbl. oil and 9 bbl. water in 23 hr., Benoist 1,995 ft., T.D. 2,013 ft.

Personal Paragraphs

R. STEINHORST, district engineer for Texas Co., Wichita, Kans., became assistant to the company division engineer at Tulsa, effective December 15. His place at Wichita was filled by W. G. AUER, of Texas Co., of Great Bend, Kans.

RALPH B. ROARK, vice president in charge of Shell Oil Co., Inc., field operations in Kansas, Oklahoma, the Panhandle and North Texas fields, heads Petroleum Producers Co., Wichita Falls, Tex., as president, pending absorption into Shell company. Shell recently bought 4,000 shares of the company held by JOHN F. O'DONOHOE.

HERBERT HENDERSON, general manager of Gulf Oil Corp., engineering department, has been elected vice president in charge of engineering of both Gulf Oil Corp. and Gulf Refining Co.

J. W. RAYBURN, automotive superintendent of Tide Water Associated Oil Co., has been elected president of the Petroleum Motor Transport Association. HOMER NEWBY, Cities Service Oil Co., Bartlesville, Okla., is first vice president; W. H. BARCLAY, Darby Petroleum Co., Tulsa, is second vice president, and C. E. ELLIOTT, Carter Oil Co., is secretary-treasurer.

RUTH SHELDON KNOWLES, Tulsa, special assistant to Petroleum Coordinator Harold L. Ickes, is spending the holidays with her parents in Tulsa. Mrs. Knowles has just completed a 4½-month tour of producing oil fields and refineries in all countries in South America.

ROBERT G. CARR, San Angelo, Tex., oil man, has been honored by the city commission of his city, which named the new municipal airport Carr Field. The field, which cost nearly a half million dollars, is said to be one of the finest in the Southwest. Mr. Carr, a lieutenant in the Army Air Corps in the first World War, had a part in locating Goodfellow Field, two-million-dollar Air Corps Basic Flying School, at San Angelo.

GEORGE SCHNEIDER, geologist, Texas Co., has been elected president of the New Orleans Geological Society. R. A. STEINMEYER, professor of geology at Tulane University, is vice president, and H. C. PETERSON, Freeport Sulphur Co., is secretary-treasurer. CYCRIL K. MORESI, consulting geologist, was named chairman of the program committee. G. E. ARCHIE, Shell Oil Co., Inc., at Houston, Tex., will address the society January 5 on "The Use of Electric Resistivities to Determine Some Reservoir Characteristics."

C. C. MILLER, Texas Co. geologist at Corpus Christi, Tex., has been transferred to Corsicana, Tex.

B. H. COREY has been appointed government oil-well inspector in the Vermilion field, eastern Alberta, Canada.

GEORGE B. HEFNER has been named chief accountant for Atlantic Refining Co. at Dallas, Tex., succeeding the late T. R. MURTHA.

HERBERT GREENFIELD, president of the Alberta Petroleum Association, has been elected president of the Calgary, Alberta, Board of Trade.

A. J. NAGEL, with Cities Service Oil Co. at Oklahoma City, Okla., has taken over the safety department in Oklahoma City, Duncan and North Texas districts.

C. P. WATSON, of Seaboard Oil Co., was recently elected chairman of the southern California section of the A.I.M.E., succeeding V. H. WILHELM. WALTER D. ABEL, secretary-treasurer, was reelected.

FRANK J. HEYD, who is now manager for F. H. R. Oil Co. of Bakersfield, Calif., has been on field location in the Round Mountain field of the San Joaquin Valley where he is supervising the spudding of a test on unproved territory near the field.

LAURENCE A. BRADEN, on military leave from Tide Water Associated Oil Co. where he served as assistant petroleum engineer in the Ventura, Calif., district production office, has been made a captain in the Infantry Training Group. He entered the service 6 months ago as a lieutenant.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

One big, vital fact, brought out so prominently that the whole world may see it, in connection with the Great War, is the utility of petroleum. Never before was the potency of petroleum so fully demonstrated.

William F. Brennan, president of the Blocki-Brennan Refining Co., died at a hospital in Chicago, Ill., December 21. He was identified with various enterprises and had formerly been a Chicago alderman.

Wyoming oil operators are taking an interest in the Ferris land bill amendment before Congress. A meeting is to be held in Casper in behalf of the movement. Perry E. Haworth, an oil man of that place, says if the amendment fails of adoption many oil operators will be driven out of business.

20 YEARS AGO

Experiments conducted with Colorado shales by the Pure Oil Co. have resulted in a recovery of 1 bbl., or 42 gal., from each ton of shale. The crude oil obtained in this manner showed a gasoline content of about 20 per cent.

Mark W. Truitt, of Enid, Okla., secretary of the Quadrangle Petroleum Co., is critically ill at a hospital in Enid.

E. W. Marland, president of the Marland Refining Co., gave to the Ponca City, Okla., hospital, a Christmas check for $5,000. He has promised to make an annual donation of a smaller amount so long as the Sisters of St. Joseph, who own and operate the hospital, continue to maintain charity wards.

10 YEARS AGO

An announcement was received from Washington, D. C., that the appointment of Walter C. Mendenhall as director of the U. S. Geological Survey, to succeed George Otis Smith, has been confirmed.

Foreign competition was brought home to American oil men this year by the arrival of Russian and Rumanian gasoline in our domestic markets.

MARK L. TERRY, engineer, Texas Co., has been transferred from Tulsa to Mattoon, Ill.

W. H. LAW, superintendent for Jones & Brooks, Inc., has been transferred to Oklahoma City, Okla., from Bellville, Ill.

D'ARCY CASHIN, consulting geologist, Houston, Tex., is spending the holidays in Havana, Cuba. He is accompanied by Mrs. Cashin.

J. A. TRAUGHBER has been transferred from the Oklahoma City, Okla., production office of Transwestern Oil Co., to its Hutchinson, Kans., offices as superintendent.

JOSEPH JENSEN, chief petroleum engineer, Tide Water Associated Oil Co., has been elected director of the Los Angeles Chamber of Commerce, for 1942.

WILLIAM SOYSTER, Los Angeles, Calif., independent operator, is in Bakersfield preparing to drill a series of shallow wells in the Devil's Den field.

HAROLD S. THOMAS, consulting geologist of Lincoln, Neb., addressed the oil-development committee of the Omaha Chamber of Commerce last week on present exploration and leasing activity in Nebraska.

H. L. ROBERTS and STEVE THOMAS, both of whom are tool pushers for Rocky Mountain Drilling Co., have been transferred from the Casper, Wyo., area, to California. Mr. Roberts takes charge of the company's drilling operations in the Santa Maria field on the California coast, while Mr. Thomas will supervise drilling in the Raisin City field of the upper San Joaquin Valley.

B. E. HORRIGAN, JR., who has been scouting in the East Texas area for Sinclair-Wyoming Oil Co., has been transferred to Mattoon, Ill.

WALTER E. SCHROEDER, Milwaukee, Wis., Deep Rock Oil Corp., has been elected chairman of the Wisconsin Petroleum Industries Committee.

JOE BLACKMAN, Tulsa, deputy conservation officer of the Oklahoma Corporation Commission, is reported resting easily at a Tulsa hospital following an emergency appendectomy.

V. A. (JACK) FROST, who has been in the geology department of of Mid-Continent Petroleum Corp., Tulsa, has resigned to assume a position on the geological staff of Ohio Oil Co.

HOWARD KEGLEY, of Los Angeles, Calif., has been elected president of the Mining Association of the Southwest. Mr. Kegley served as vice president last year and previously served as president of the association for three consecutive years.

E. D. (GENE) HARDISON, for several years associate petroleum engineer of Union Oil Co., has resigned to accept a position in the Los Angeles, Calif., office of the petroleum coordinator, headed by COMDR. WENTWORTH OSGOOD.

JACK LEVERING, land man at Houston, Tex., for Stanolind Oil & Gas Co., has been called into service as a naval lieutenant and is now at the New Orleans naval station. He is the son of Mr. and Mrs. Lee Levering, of Tulsa.

WILLIAM K. WHITEFORD, executive president of the British American Oil Producing Co., was given a farewell party by Tulsa oil men on December 22 at the Tulsa Club. Mr. Whiteford has been transferred to the home office of his company in Toronto, Canada.

Recycling Specialist

Robert T. Wilson, who has the triple title of president of La Gloria Corp., vice president of Coastal Recycling Corp., and vice president of Gulf Plains Corp., with operations in the Agua Dulce and La Gloria fields in Southwest Texas, is an Ohioan by birth. At an early age he moved to Pittsburgh, Pa., and received his secondary education there. He went to University of Pennsylvania in 1913. He enlisted as a private in the Army Ambulance Service in May 1917, and was discharged with the grade of first lieutenant, Cr. deG., 2 years later, after 16 months' service overseas. He was graduated from University of Pennsylvania in 1920, as of the class of 1917, with a bachelor of science degree.

ROBERT T. WILSON

Though interested in the steel business exclusively prior to 1928, in that year he entered the oil and gas business through investments made in the industry by the firm of Fownes & Orr, Inc., investment bankers, of which he was an officer. He was an official of Shamrock Oil & Gas Corp., Amarillo, Tex., from the time of its organization and moved to Texas in 1936 in active charge of its operations. He was president of that company when he resigned in the spring of 1939 to assist in the formation of the companies with which he is now associated. The operations of one of these companies, La Gloria Corp., are described in this issue, in an article beginning on Page 30.

Mr. Wilson is now a resident of Corpus Christi, Tex., where he has built his permanent residence. He has unbounded confidence in the opportunities offered by the Gulf Coast area. All of the companies in which he is interested operate plants for the extraction of gasoline and kerosene from natural gas by the recycling process.

J. W. (RED) SELBY, chief scout for the Shell Oil Co., Inc., Houston, Tex., left last week for a short vacation which he will spend hunting deer in Southwest Texas.

W. K. CARR, formerly staff assistant of Mid-Continent Oil and Gas Association, has been elected secretary of the Wagoner, Okla., Chamber of Commerce. He has already assumed his new duties.

THOMAS W. SIMMONS, president of Bolsa Chica Oil Corp., recently completed negotiations for the purchase of Pacific Iron & Steel Co. of Tacoma, Wash., and the Bass Foundry Co. of Fort Wayne, Ind.

JOHN GRACIE, boiler-maintenance foreman for the production department of General Petroleum Corp. at the company's Vernon, Calif., headquarters, will retire January 1. He has spent 25 years in the company's production department.

W. E. LINDEN, superintendent of equipment for General Petroleum Corp., at the company's Vernon, Calif., headquarters, will retire January 1 after 26 years of service in the production department at California locations for the company.

HENRY C. JUDD, for several years assistant treasurer of Pacific Public Service Co., has been elected treasurer of the company succeeding GEORGE J. O'BRIEN, who recently became assistant to the president of Standard Oil Co., with headquarters in Los Angeles, Calif.

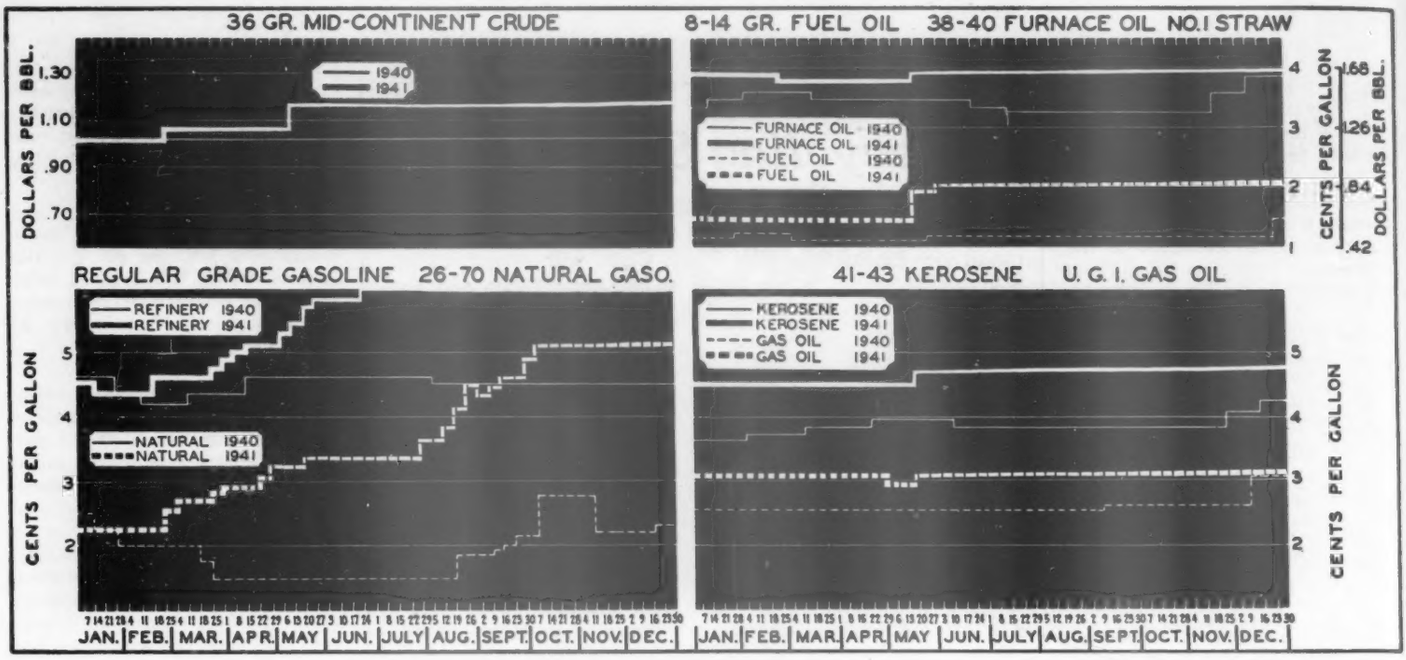
ABE SILVERBERG, chemical engineer for Wishnick-Tumpeer, Inc., has been appointed superintendent of the company's asphalt and chemical plant at Chicago, Ill. Mr. Silverberg was chief chemist of Sinclair-Pierce Oil Co. refinery at Tampico, Mexico, until the Mexican oil expropriation incident. He was later superintendent of the American Wax Refining Corp. in New Jersey.

Shifts: CHARLES A. DILLARD, superintendent, Carter Oil Co., from St. Elmo, Ill., to Plaquemine, La.; C. R. HENSCH, geologist, Standard Oil Co. of Texas, from San Angelo, Tex., to Pecos, Tex.; J. A. SINCLAIR, engineer, Magnolia Petroleum Co., from Alice, Tex., to Houston, Tex.; S. L. ROSE, geologist, California Co., from Tulsa, to Ardmore, Okla.; H. D. CHRISLIP, engineer, Gulf Oil Corp., from Tulsa to Oilton, Okla.; C. R. RICHARDS, engineer, Sinclair Prairie Oil Co., from Kenbro, Kans., to Thrall, Kans.; F. G. PHILLIPS, engineer, Shell Oil Co., Inc., from Hallettsville, Tex., to Eagle Lake, Tex.; J. H. SALMON, engineer, Shell Oil Co., Inc., from Washington, D. C., to Arlington, Va.; RICHARD F. BERGER, engineer, Universal Oil Products Co., from Berwyn, Ill., to Spokane, Wash.; EDGAR S. ROSS, engineer, Sun Oil Co., from Bala Cynwyd, Pa., to Wynnewood, Pa.; E. H. SHANNON, engineer, Texas Co., from Carrizo Springs, Tex., to Laredo, Tex.; MARK H. O'CONNELL, geologist, Cities Service Oil Co., from Burkie, La., to Belleville, Tex.; J. C. FINNERMAN, engineer, Warren Petroleum Corp., from Salem, Ill., to Magnolia, Ark.; ARTHUR AUVERMANN, superintendent, Trinidad Leaseholds, Ltd., from Hico, Tex., to Trinidad, British West Indies; MAX DAVID, geologist, Landreth Production Co., from Lafayette, La., to Midland, Tex.; LOUIS STORM, engineer, Shell Oil Co., Inc., from Iowa, La., to McCamey, Tex.; CURTIS C. BALDING, engineer, Max B. Miller Co., Inc., from Malta, Ohio, to New York City; L. M. FLEMING, engineer, Kaw Pipe Line Co., from Claflin, Kans., to Lyons, Kans.; HUBERT C. BAUMLER, engineer, Cities Service Oil Co., from Lyons, Kans., to Bartlesville, Okla.; CRAIG TERRIS, geologist, Mott-Smith Corp., from Bottineau, N. D., to Tallulah, La.; M. H. McKINNEY, Lago Oil & Transport Co., from Aruba, Netherlands West Indies, to Wichita Falls, Tex.

BEN OLIPHANT, petroleum engineer, with JOHN OWENS and ORVILLE WASHICHEK, welders, of Bartlesville, Okla., and CHARLES ROWEN, JR., and ELMER MILLER, welders of Caney, Kans., have left for Venezuela.

EDWIN W. PAULEY, Beverly Hills, Calif., president of the Petrol Corp., Los Angeles, Calif., has been appointed secretary of the Democratic National Committee. He will spend most of his time at headquarters in Washington, D. C., and will establish his office there in the near future.

VICTOR H. SCALES, who has been a member of the staff of the American Petroleum Institute for several years in New York, and who since May 1934 has been director of publicity, has resigned as of January 1. Mr. Scales, previous to joining the Institute staff, was in newspaper work. During his stay with the Institute he spent a large part of his time with the American Petroleum Industries Committee, tax division of the Institute. Mr. Scales has not announced his plans for the future.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Changes in Operating Conditions May Offset Tire Rationing Plan

By H. STANLEY NORMAN

THE first impact of tire rationing weighed heavily this week on the Mid-Continent refining industry as those responsible for shaping and directing policies attempted to appraise this and other recent moves in Washington, D. C., with rational perspective. There is general agreement among key refinery men that restrictions imposed on distribution of automobile tires, if continued in present severity, may bring a significant reduction in civilian consumption of petroleum.

Still, Mid-Continent refiners are not convinced that tire restrictions alone will be nearly as serious in depressing petroleum consumption by civilian automobile operators as the more pessimistic have visualized. There is an apparent inclination on the part of at least a numerical majority to cling to middle-of-the-road views. It is possible, some refiners contend, that military requirements from this country and other anti-Axis forces will go far in offsetting any curtailment of civilian consumption.

Special Task Most Pressing

Another group refuses to be particularly disturbed about the darker outlook for civilian consumption on the grounds that the petroleum-refining branch of the industry must concentrate its technical-development skill and its construction efforts on the task of tripling 100-octane gasoline production. There will be little material available, some refiners hold, for constructing new capacities for other than 100-octane gasoline and that the industry is not in position to absorb another increase in demand such as prevailed in the past 2 years without expanding facilities.

There was no evidence in first-of-the-week business that prospects for curtailed civilian consumption had yet reacted to depress purchases of products from Mid-Continent refiners. Demand for motor fuel was reported brisk from contract and spot-market customers in the Middle West and this, accompanied by more urgent calls for heating oils, maintained the product-price structure at unchanged and firm levels. Kerosene, range oils and other light fuels for space heater and central-heating plant consumption were all in higher demand.

One definite benefit that has accrued to the refining branch of the industry from the defense program has been the standardization of containers for petroleum products and the regulations governing return of drums and other types of packages which may be reused. Inattention of dealers and wholesale consumers to the return of motor-oil drums, grease pails and other similar containers has constituted a large item of expense in the operations of refiners for years.

Refined Oil Market Barometer

Refiners throughout the country this week attempted to appraise the reaction tire rationing will have on consumption of motor fuel. About the only point on which agreement was apparent was that it probably will not be as bad as first indicated. In the East, key men contend that 1942 consumption will be greater than last year, although previous forecasts of a 7.5 per cent gain have been modified to a more conservative figure.

MID-CONTINENT: Demand for all products continues strong at unchanged prices.

GULF COAST: Lend-lease purchases and higher contract buying clean up market.

CALIFORNIA: Disruption of tanker services preventing normal deliveries.

PENNSYLVANIA: Prices firm and demand strong for all products.

CHICAGO: Colder weather increases call for heating oils.

Lead Priority Rating

Refiners are awaiting a new priority order which was reported under preparation this week in Washington, D. C., governing the distribution of tetraethyl lead. For more than a month, lead shipments to refinery buyers in all parts of the country have been restricted on a voluntary basis by the Ethyl Gasoline Corp. Reports reached the Mid-Continent this week that the OPM soon will issue a priority order on distribution of this anti-knock compound. Refiners in certain parts of the country who are forced to operate on crudes of inherently inferior knock characteristics then will be permitted to receive enough tetraethyl lead fluid to bring their motor fuels up to a competitive parity.

Practically all gasoline in the Mid-Continent has been pegged at an octane standard of 72 (A.S.T.M.) for regular, or house brand, grades. In most instances this involved a reduction of 2 to 3 octane numbers and in a few cases the retrenchment forced by scarcity of tetraethyl lead was more severe. There have been few complaints from consumers and none of a serious nature reported by refiners.

Demand for residual fuel oils in the Middle West continues to increase although in the case of Mid-Continent refiners practically their entire production is committed to railroads under contracts for terms of 6 months to 1 year. Railroads in the Southwest are calling for all heavy fuel they can command under terms of their contracts and are willing purchasers of spot lots wherever available at the current quotations, ranging from 85 to 90 cents.

Eastern Oil Men Still Contend 1942 Demand Will Increase

By J. P. O'DONNELL

NEW YORK, Dec. 30. — While it is generally agreed that the rationing of automobile tires will have some effect on gasoline consumption in 1942, opinions expressed by a number of oil men concur in the belief that it will not result in a decrease from 1941 consumption levels. Earlier forecasts of 1942 gasoline consumption predicted a 7.5 per cent increase domestically. Tire rationing is expected to reduce the gain to less than that predicted but not to eliminate it entirely. The most conservative opinion expressed was that "total consumption will not be less than that of 1941 and may be a little more."

One of the principal effects of the rationing order is expected to be a psychological reaction that is most severe immediately after such a drastic order is issued. This is likely to result in an immediate but not protracted curtailment of gasoline buying.

In evaluating the situation economists take into consideration recapping, retreading, the use of scrapped tires, and spare tires which, in effect, constitute a hidden reserve. They also consider that roughly 30 per cent of today's cars are 1940 and 1941 models, most of which have 1 to 2 years' wear remaining on original tires. Another factor is replacement sales which were 17 per cent greater in 1941 than in 1940, and another of considerable importance is that major-fleet operators have ample stores of tires on hand, sufficient to last for many months.

Little credence is placed on predictions that 25 per cent of the cars will be off the highways in 6 months or less. Such predictions are based on the fact that under normal circumstances the average car takes two replacement tires per year. On this basis all cars would be off the road in 2 years. These predictions do not consider the effect of recapping and retreading and other economies which will undoubtedly be put into effect.

The tire situation is admittedly serious. There were only 4,042,995 tires in manufacturers' stocks on November 30, 1941, against 9,162,995 a year ago. Replacement shipments averaged 3,500,000 per month in the first 11 months of 1941, showing to what dangerously low levels stocks had been permitted to drop. The overall demand for tires has been almost 20 per cent greater in 1941.

Curtailment in civilian gasoline consumption in 1942 will be offset at least to some degree by the increase in military requirements which will undoubtedly be marked. Even with this increase total military requirements will represent a small fraction of total demand but it is expected to be sufficient to take up much of the slack resulting from tire rationing. The possibility that gasoline rationing may be adopted in order to insure conservation of rubber, most of which is used in tires, has been mentioned but this method is not expected to be adopted. It is believed that if gasoline rationing is required, other forces such as lack of transportation facilities or tightness in refining capacity, caused by the industry's inability to expand, will be responsible.

This possible dislocation of our normal supply situation could be offset to some degree by the recently completed pipe lines and by new tanker construction. Neither of these, however, would be able to offset any sudden and substantial withdrawal of tankers from the Gulf-to-North Atlantic service. Utilization of rail facilities which was resorted to during the recent threat would not accomplish the purpose unless a substantially greater number of tank cars were made available than were used in the past few months. These possibilities have revived talk of the national-defense line from Texas to the northeastern seaboard, but the pressing demands for steel leave such an undertaking as definitely doubtful.

Details of A.P.I. weekly refinery statistics, giving the regional breakdown of crude runs to refineries and stocks of various products, normally published on this page of The Oil and Gas Journal, are discontinued with this issue. Total stocks of the various products and crude runs to refineries will be found in their usual place on the Trends page.

Inventory Expansion Planned

An increased burden that will tax transportation facilities is the plan to increase refined-products inventories on the Atlantic Coast. In order to expand current inventories, deliveries above those now being made would be necessary. Comparatively high stocks were maintained on the East Coast up to the early part of December, but withdrawals in the last weeks for which figures are available averaged 500,000 bbl. this week. With the possibility of a transportation interruption existing, it is obvious that this trend cannot be allowed to continue without reducing the margin of safety that oil executives and government officials feel is now essential.

Most of the concern is centered on residual fuel oil, stocks of which are far below a satisfactory level in view of the greatly increased demand by industry, the Navy and the merchant marine. East Coast stocks on December 20 this year, as reported by the American Petroleum Institute, were only 12,598,000 bbl. against 11,375,000 bbl. a year ago. This is an increase of less than 11 per cent. On the other hand, demand has been running an estimated 15 per cent greater than a year ago. Stocks of the other major refined products are substantially higher than a year ago and, in view of the prospects of lower consumption, are regarded as satisfactory. On December 20 gasoline stocks on the East Coast were 20,218,000 bbl., 2,432,000 bbl. higher than on the corresponding date last year, and light fuel-oil stocks were 19,693,000 bbl., 4,916,000 bbl. up from a year ago.

Price Structure Firm

From the price standpoint, the East Coast market is firm. Demand for all products, including gasoline, has continued well above last year. Heating-oil requirements were sufficiently heavy in the third week of December to result in the heaviest draft on stocks of the season, almost 500,000 bbl. There have been no price changes though there have been indications of a possible advance for residual fuel oil. Some quantities of Bunker C fuel were reported to have been sold above the spot market, but quotations are generally within the $1.35 to $1.45 per barrel range that has been unchanged for months.

Lend-Lease Purchases Absorb Coastal Stocks

HOUSTON, Tex., Dec. 29.—Lend-lease demand augmented by contract purchases is taking practically all available Gulf Coast refinery products. Spot-market buyers and those without regular connections are now finding it almost impossible to obtain material, and with increasing lend-lease and U. S. Army and Navy needs, refiners are expecting a curtailment in the volume of material available for present regular outlets .

At the opening of the week bona fide buyers were in the market for various cargoes of material including a cargo of gas oil, another of residual fuel, another of special naphtha, and another of Bunker C, but were unable to find a source of supply. At the same time, the Navy issued requests for another 1,415,400 bbl. of straight-run gas oil to be delivered over a period of 6 months for lend-lease account. This, with previous purchases, is expected to take the major portion of the output of this product for the 6 months. Bids will be received January 8.

Several inquiries for kerosene also were being circulated with buyers offering 4.25 cents. Kerosene, already tight, is showing definite further strength with sellers leaning to the top quotation of 4.5 cents for January delivery.

With new strength being manifest in fuels as a result of relief brought to several sources of supply that have been long on this material, the next several weeks is expected to see the low of the market move up from 85 cents to 90 cents on Bunker C. Several sellers, for some time, have been quoting as high as 96 cents for heavy fuels although in most of these instances No. 6 fuel has been offered in place of Bunker C. Only occasional cargoes are available from limited sources for spot buyers.

Crude Oil Stocks Show Increase of 934,000 Bbl.

Stocks of domestic and foreign crude oil in the United States on December 20 totaled 243,617,000 bbl., a net increase of 934,000 bbl., according to the Bureau of Mines report. A year ago, stocks of crude totaled 262,488,000 bbl. Comparative data is shown below:

(Bureau of Mines Estimate)

Week ended:	Barrels of crude*
December 20, 1941	243,617,000
December 13, 1941	242,683,000
December 21, 1940	262,488,000

*Figures do not include heavy, unrefinable California crude.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of December 27, 1941

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank wag.
Chicago, Ill.	16.1	14.1	4.5	10.3
Decatur	15.4	13.4	4.5	9.5
Joliet	16.4	14.1	4.5	10.3
Peoria	16.2	14.2	4.5	10.1
Quincy	13.4	12.4	4.5	10.0
Davenport, Ia.	16.2	14.7	4.5	10.1
Des Moines	15.9	11.9	4.5	9.8
Mason City	16.2	14.7	4.5	10.1
Duluth, Minn.	17.7	16.2	5.5	10.6
Mankato	17.4	15.9	5.5	10.3
Minneapolis	17.4	15.9	5.5	10.3
La Crosse, Wis.	17.4	15.9	5.5	10.3
Green Bay	17.7	16.2	5.5	10.6
Milwaukee	17.6	16.1	5.5	10.5
Detroit, Mich.	15.9	14.4	4.5	9.6
Grand Rapids	15.9	13.8	4.5	9.6
Saginaw	15.9	14.4	4.5	9.6
Evansville, Ind.	16.9	15.4	5.5	9.6
Indianapolis	17.1	15.2	5.5	9.8
South Bend	17.5	16.0	5.5	10.2
Fargo, N. D.	18.4	16.9	5.5	11.3
Huron, S. D.	17.8	16.3	5.5	10.7
Kansas City, Mo.*	14.9	13.4	4.5	9.4
St. Louis*	13.4	11.9	4.5	9.8
St. Joseph	15.7	14.2	4.5	9.6
Wichita, Kans.	14.8	12.7	4.5	8.0

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers. On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off, minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Sept. 18, 1941, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.5 cents; 400 gal. and over 7.0 cents: Stanolex fuel oil A, 1-99 gal., 8.0 cents; 100-399 gal., 7.0 cents; 400-749 gal., 6.0 cents; 750 gal. and over, 5.25 cents. Stanolex fuel oil B, 1-99 gal., 8.0 cents; 100-399 gal., 7.0 cents; 400-749 gal., 6.0 cents; 750 gal. and over 5.25 cents. Stanolex Bunker C fuel oil, 1-399 gal., 6.5 cents; 400-999 gal., 5.5 cents; 1,000 gal. and over, 4.5 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Gasoline Dlr. vided	Gasoline Inc. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Gasoline Net dlr.	Gasoline Inc. tax	Kero. tank wag.
Atlanta, Ga.	18.50	18.50	7.5	10.0
Augusta	18.50	18.50	7.5	9.5
Macon	18.50	18.50	7.5	10.0
Savannah	17.50	17.50	7.5	9.0
Birmingham, Ala.	19.00	19.00	8.5	9.0
Mobile	19.00	19.00	9.5	8.5
Montgomery	20.00	20.00	9.5	10.0
Jackson, Miss.	18.00	18.00	7.5	9.0
Vicksburg	17.50	17.50	7.5	8.5
Jacksonville, Fla.	18.50	18.50	8.5	8.0
Miami	18.50	18.50	9.5	8.0
Pensacola	19.00	19.00	9.5	8.0
Tampa	18.50	18.50	8.5	8.0
Lexington, Ky.	17.50	17.50	6.5	9.0
Covington	16.50	16.50	6.5	9.0
Louisville	17.00	17.00	6.5	8.5
Paducah	15.50	15.50	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank wag.	Gasoline Dlr. tank wag.	Gasoline Inc. tax	Kero. tank wag.
Atlantic City	13.5	14.0	4.5	7.9
Newark	13.5	14.0	4.5	7.9
Annapolis	14.85	15.35	5.5	9.7
Baltimore	14.25	14.75	5.5	8.7
Cumberland	15.65	16.15	5.5	10.2
Washington, D. C.	12.50	13.00	3.5	9.2
Danville, Va.	16.95	17.45	6.5	10.45
Norfolk	15.75	16.25	6.5	10.2
Petersburg	16.05	16.55	6.5	11.2
Richmond	16.05	16.55	6.5	11.2
Roanoke	17.25	17.75	6.5	10.7
Charles'n, W. Va.	17.55	18.05	6.5	11.5
Parkersburg	16.85	17.35	6.5	11.5
Wheeling	16.85	17.35	6.5	11.8
Charlotte, N. C.	18.40	18.90	7.5	9.5
Hickory	18.95	19.45	7.5	10.5
Mount Airy	18.80	19.30	7.0	9.7
Raleigh	18.15	18.65	7.0	10.5
Salisbury	18.45	18.95	7.5	10.9
Charleston, S. C.	17.25	17.75	7.5	(*)
Columbia	18.10	18.60	7.5	(*)
Spartanburg	18.80	19.30	7.5	(*)

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connections, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery: 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank wag.	Gasoline Dlr. tank wag.	Gasoline Inc. tax	Kero. tank wag.
Philadelphia, Pa.	14.0	15.0	5.5	10.15
Pittsburgh	14.5	15.5	5.5	10.5
Allentown	14.5	15.5	5.5	10.5
Erie	14.5	15.5	5.5	10.5
Scranton	14.5	15.5	5.5	10.5
Altoona	14.5	15.5	5.5	10.5
Dover, Del.	...	15.5	5.5	10.5
Wilmington	...	15.0	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck* wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
San Francisco	14.5	18.5	4.5	11.5
Los Angeles	14.0	18.0	4.5	10.0
Fresno, Calif.	15.5	19.5	4.5	12.5
Phoenix, Ariz.	18.5	22.5	6.5	12.5
Reno, Nev.	17.5	21.5	5.5	13.5
Portland, Ore.	17.0	21.0	6.5	13.5
Seattle, Wash.	17.0	21.0	6.5	13.5
Spokane	19.0	23.0	6.5	16.5
Tacoma	17.0	21.0	6.5	13.5

*Posted net tank-truck prices (including tax).

Resale and commercial discounts, effective October 1, 1941: Tank-car deliveries 0.25 cent a gallon off posted net tank truck. Commercial: Retail deliveries, and/or tank-truck deliveries of less than 40 gal., 4 cents per gallon above posted net tank-truck price for Standard Aviation, Standard's Supreme, and Standard Gasoline, and 3 cents per gallon above posted net tank truck for Flight Gasoline, except single deliveries of less than 40 gal. to marine trade only, which are billed at posted net tank-truck price.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Inc. tax	Kero. tank wag.
Denver, Colo.	14.5	5.5	11.0
Grand Junction	18.0	5.5	12.5
Pueblo	14.5	5.5	9.5
Casper, Wyo.	17.0	5.5	12.0
Cheyenne	16.0	5.5	11.5
Billings, Mont.	18.0	6.5	12.5
Butte	17.0	6.5	13.5
Great Falls	17.0	6.5	12.5
Helena	17.0	6.5	13.0
Salt Lake, Utah	18.5	6.5	14.5
Boise, Idaho	†20.1	6.5	16.5
Twin Falls	†21.1	6.5	17.0
Albuquerque, N. M.	*17.5	7.0	10.0
Roswell	*15.5	7.0	8.5
Santa Fe	‡18.0	7.5	10.0

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Texarkana, Ark.	14.0	5.5	6.0
Fort Smith	15.5	7.0	6.5
Little Rock	17.25	8.0	8.0
Muskogee, Okla.	15.0	7.0	8.0
Oklahoma City	15.0	7.0	8.0
Tulsa	15.0	7.0	8.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank wag.	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
New Orleans, La.	17.25	17.75	8.5	‡10.5
Baton Rouge	17.25	17.50	8.5	‡10.5
Alexandria	17.25	17.50	8.5	‡10.5
Lafayette	17.50	18.00	8.5	‡10.0
Lake Charles	17.50	18.00	8.5	‡12.0
Shreveport	17.00	17.0	8.5	‡9.0
Knoxville, Tenn.	20.00	20.50	8.5	12.5
Memphis	17.25	17.75	8.5	10.5
Chattanooga	19.00	19.5	8.5	11.0
Nashville	19.00	19.5	8.5	10.0
Bristol	18.25	18.75	8.5	12.0

Esso at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers throughout Louisiana, Arkansas, and Tennessee: On single deliveries of 50 gal. or more at a time — posted consumer tank-wagon price. On single deliveries of less than 50 gal. at a time—posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price is the same as the posted dealer tank-wagon price, less 0.5 cent per gallon.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Comm. tank wag.	Gasoline Dlr.* tank wag.	Gasoline Inc. tax	Kero. tank wag.
Albany	14.2	14.7	5.5	7.7
Met. New York	14.4	14.9	5.5	8.0
Buffalo	14.5	15.0	5.5	8.3
Rochester	15.1	15.6	5.5	8.8
Syracuse	14.8	15.3	5.5	8.7
Portland, Me.	14.6	15.1	5.5	8.1
Manchester, N. H.	15.6	16.1	5.5	9.0
Burlington, Vt.	15.2	15.7	5.5	8.3
Boston, Mass.	13.2	13.7	4.5	8.0
Worcester	13.8	14.3	4.5	8.1
Hartford, Conn.	13.9	14.4	4.5	7.6
New Haven	13.3	13.8	4.5	6.9
Providence, R. I.	13.3	13.8	4.5	7.8

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consuming price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank wag.
Omaha	17.9	15.4	6.5	9.8
McCook	18.5	15.9	6.5	9.5
Norfolk	18.4	16.9	6.5	10.3
North Platte	17.5	16.4	6.5	10.7
Scottsbluff	18.9	16.0	6.5	9.5

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Incl. tax	Kero. tank wag.
Dallas, Tex.	14.0	17.0	5.5	7.0
Fort Worth	14.0	17.0	5.5	7.0
Houston	14.0	18.0	5.5	8.0
San Antonio	14.0	18.0	5.5	7.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline

IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Halifax, N. S.	29.5	13.0	19.0
St. John, N. B.	29.5	13.0	19.0
Montreal, Que.	28.0	11.0	17.5
Toronto, Ont.	28.5	11.0	18.0
Hamilton, Ont.	28.5	11.0	18.0
Winnipeg, Man.	30.5	10.0	22.5
Brandon, Man.	31.0	10.0	23.0
Regina, Sask.	28.0	10.0	20.0
Saskatoon, Sask.	30.8	10.0	22.8
Edmonton, Alta.	28.9	10.0	20.9
Calgary, Alta.	26.0	10.0	18.0
Vancouver, B. C.	25.0	10.0	24.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers 1 cent below tank-wagon price. In Maritime Provinces both divided and undivided dealers pay tank-wagon price.

Selected Crude Prices

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Smackover, Arkansas, heavy	.83
Illinois basin	1.37
Pecos County, Texas	.95
Lance Creek, Wyoming	1.12
Bradford, Pennsylvania	2.75

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill Calif.	Okla-homa, Kansas	Gulf Coast, Texas	West Texas, Lea County, N.M.
18-18.9	$0.80	...	...	...
19-19.9	.84	...	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	...	1.07	1.30	.94
32-32.9	...	1.09	1.32	.96
33-33.9	...	1.11	1.34	.98
34-34.9	...	1.13	1.36	1.00
35-35.9	...	1.15	1.38	1.02
36-36.9	...	1.17	1.40	1.04
37-37.9	...	1.19	1.42	1.06
38-38.9	...	1.21	1.44	1.08
39-39.9	...	1.23	1.46	1.10
40 and above	...	1.25	1.48	1.12

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of December 27, 1941
(Most prices in cents per gallon)

The quotations are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055
60-62 400 grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
63-66 octane	.0550	.06
60 octane and below	.05125	.05375
60-62 400	.05	.06

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
63-66 octane	.0550	.05875
60 octane and below	.05	.06

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
60 octane and below	.05	.05375

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055
60-62 400 grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.0750	.0775
80 octane (1939 Research)	.0775	.0800

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.065	.0725
54-58 U. S. Motor	.055	.0625

EAST COAST (domestic)—

U. S. Motor (minimum 72 octane):		
New York (Bayonne)*	.08	.085
Philadelphia	.08	.0825
Boston		.085
Baltimore	.0775	.0825
Charleston, S. C.	.0725	.0775

*All grades of gasoline ½ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
80 plus (research)	.06625	.0675
72-74 octane (leaded)	.0625	.06375
70-72 octane (unleaded)	.0625	.0650
68-70 octane (unleaded)	.0625	.0650

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.05125
Grade 18-55	.06125	.0625

NORTH TEXAS—

Grade 26-70		.0475
Grade 18-55	.05625	.0575

CALIFORNIA—

75-85 375-390	.045	.05

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.0475

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p. 110-flash, 540-550 e.p.	.0375	.03875
41-43 gr., 300-320 l.b.p. 110-125 flash, 500-520 e.p.	.03875	.04
46-48 gr., 210-230 l.b.p. 480 max., e.p.	.04125	.0425

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.0450	.0475
41-43	.04375	.04625

NORTH TEXAS—

41-43	.0425	.04625

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04375	.04625

ARKANSAS (Ark. and N. La. del.)—

41-43	.04375	.04625

PENNSYLVANIA (inland refineries)—

46	.0625	.0650
45	.06375	.06725

CHICAGO (Based on Group 3)—

42-44	.0450	.0475
41-43	.04375	.04625

CALIFORNIA (Pac. Coast market)—

38-40 high-burning test	.045	.055

NEW YORK (Bayonne, N. J.)—

41-43		.053

GULF COAST (domestic)*—

41-43	.04	.04125

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.04	.0425
No. 1 white (38-42)	.03875	.04125
No. 2 straw (32-36)	.03625	.03875
No. 3 zero to 10 (28-32)	.035	.0375

NORTH TEXAS—

No. 1 white (38-42)	.03825	.04125

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2 (32-36)	.0325	.035

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.0325	.035

CHICAGO (Based on Group 3)—

Range oil	.04	.0425
No. 1 white (38-42)	.03875	.04125
No. 2 straw (32-36)	.03625	.03875
No. 3 zero to 10 (28-32)	.035	.0375

NEW YORK (Bayonne, N. J.)—

*No. 1		.053
*No. 2		.052
*No. 3		.052

Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

No. 5, low pour point (18-22)	.85	.90
No. 6, 15 and above (10-16)	.85	.90

NORTH TEXAS—

No. 5, low pour point (18-22)	.80	.85
No. 6, 15 and above (10-16)	.80	.85

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

No. 5, low pour point (18-22)	.85	.90
No. 5, 15 and above (18-22)	.85	.90
No. 6, low pour point (10-16)	.85	.90
No. 6, 15 and above (10-16)	.85	.90

PENNSYLVANIA (inland refineries)—

36-40	.055	.05875

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidew.)	.75	.85
10-16 (cargo lots)	.75	.85
12-17 (tank cars)	.65	.75
10-17 (high sulfur)	.55	.65
San Joaquin Valley:		
10-18 (tank cars)	.70	.85
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.80	.85

Lighterage charge 5c bbl. additional.

GULF COAST—

No. 2 fuel		.04
43-47 diesel		.04125
48-52 diesel	.04125	.0425
53-57 diesel		.0425
58-and-above diesel	.0425	.04375
Diesel bunkers		1.45
Bunker C (bulk cargoes)	.85	.90
Bunker C (bunkers)	.85	.90

NEW YORK (Bayonne, N. J.)—

27 plus gas oil		.053
28-30 diesel (lighterage 6¼c per bbl.)		2.15
28-30 diesel (tank cars)		.052
Bunker C (to ocean-going ships in N. Y. Harbor)	1.35	1.45
Industrial fuel (tank cars)		.044

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.27
150-160 D, 0-10		.23
150-160 D, 10-25		.225
120-125 D, 0-10		.225
120-125 D, 10-25		.22
Steam refined:		
600 dark green (untreated)		.145

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.305
15 pour point		.295
25 pour point	.25	.28
Steam refined:		
600	.15	.16
650	.155	.165
600 flash	.16	.175
630 flash	.17	.18

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.145
180-3		.15
200-3		.15
250-3		.165
280-3		.175
280-4		.17
300-3		.185
350-3½		.19
400-3½		.20
500-3½		.205
600-3½		.21
100-2½ paraffin oil 10-25		.0825
10-25 pour point:		
200-3		.145
250-3		.16
280-3		.17
280-4		.165

CALIFORNIA (moving to dom. mkt.)—

Pale oils:		
200-2½-3	.07	.0775
300-2½-3	.07	.0775
400-3-4	.0725	.08
450-3-4	.0725	.08
550-3-4	.0875	.1075
600-3-4	.0875	.11
Red oils:		
200-4-5	.07	.0775
300-5-6	.0725	.08
350-5-6	.09	.11
400-5-6	.09	.11
450-5-6	.09	.1125
500-5-6	.0925	.1125
600-5-6½	.0925	.1125
700-6½ plus	.0925	.1125
750-6½ plus	.0925	.1125
900-6½ plus	.0925	.1125

GULF COAST—

Pale oils:		
100-3	.0625	.0650
200-3	.0850	.0875
300-3	.09	.0925
500-3½	.0975	.10
750-3½	.10	.1025
1,200-3½	.1025	.10375
2,000-4	.1050	.1075
3,000-4	.1225	.1250

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		.385
10 pour point		.375
15 pour point		.365
25 pour point		.31
200 vis., at 70° F., 3 color:		
Zero pour point		.405
10 pour point		.395
15 pour point		.385
25 pour point		.33

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale		.06

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale		.0625
124-126 (A.m.p.) w.c. scale		.0625

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax	.0560	.0640
128-130 (A.m.p.) wax	.0560	.0660
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.		.061
124-126 (A.m.p.) y.s.		.061
Petrolatum in barrels, carload lots:		
Dark green		.02875
Amber	.02875	.03125
Extra amber	.03125	.03375
Lily white	.04875	.05375
Snow white	.05625	.05750
Cream	.04125	.05250

Note: Most refiners are not quoting on wax pending interpretation of OPA order.

Export Prices

GASOLINE

GULF COAST—

60-62 400	.0550	.0675
61-63 390	.0575	.0650
64-66 375	.0575	.0650

LOS ANGELES—

U. S. Motor grades:		
Above 60 octane	.06	.0625
65-69 octane	.0575	.06
60-65 octane	.0525	.055

KEROSENE

GULF COAST—

41-43 water white	.0375	.04

LOS ANGELES—

41-43 water white	.05	.0525

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbl.)—

Cylinder stocks:		
600 S.R. unfiltered		.265
630 S.R. unfiltered		.27
600 flash, S.R.		.265
650 flash, S.R.		.27
Bright stock:		
Light, 25 pour point	.36	.37

NEUTRAL OIL

200-3 color	.43	.50
150-3 color	.41	.46

PARAFFIN WAX

NEW YORK (prices per bbl.)—

123-125 A.m.p.	.0560	.0625
125-127 A.m.p.	.0560	.0625
128-130 A.m.p.	.0585	.0650
133-135 A.m.p.	.0615	.0700
135-137 A.m.p.	.0640	.0700
Crude scale:		
124-126 w.s.		.061
124-126 y.s.		.061

Price Ceiling Penalizes Progress

(Continued from Page 13)

A summary of the situation shows that petroleum-products prices have risen proportionately more than all-commodities prices. This, however, is entirely the result of the fact that petroleum-products prices are far lower than all-commodities prices and that a small advance in the former is a greater proportion of the preboom price than a larger advance in the latter. Actually the advance has been greater in the prices of all commodities which have risen 15 cents on the normal dollar against 12.8 cents for petroleum products.

If the oil industry had not effected such a great reduction in prices in the past 15 years but had kept them on a level with all-commodity prices, advances which have been made since the war boom would have been less than average. As such they very probably would have escaped the restrictions which have been placed upon them. Thus the restrictions are, in effect, a penalty on the industry for reducing prices of its products, an action which was accomplished through increasing efficiency and which was demanded by the free competition which has governed those prices.

Another interesting comparison which shows how comparatively little petroleum products have risen as a result of war influences is one between the cost-of-living index and the retail price of gasoline indexed on the same basis. The cost-of-living index, using 1923 as a basis, which has been prepared by the National Industrial Conference Board, shows that the cost of living has been rising since January 1940, when it was 84.6. In November 1941 it was up to 92.9, an increase of 8.3 points or virtually 10 per cent. An index of retail gasoline prices, exclusive of taxes, on the same basis shows a rise from 64.2 in January 1940 to 66.7 in November 1941, an increase of 2.5 points or about 4 per cent.

●

Reserve Estimates Provide Important Danger Signals

(Continued from Page 18)

have enough oil in sight for our present needs and enough for any demand that may be reasonably expected for the next few years. The long-range estimate tells whether there will be enough in the future or whether it will be necessary to go to other countries, other practices or other sources of fuel for supplies.

To this observer, it appears that unless the discovery rate increases, all of the oil which shall have been found by any means will be insufficient for requirements within a decade or two.

Table 1 shows the relationship existing between estimates of reserves allocated to the year of discovery of the field and estimates made as of a certain date. The latter are the average of estimates made by California geologists and differ slightly from those made by The Oil and Gas Journal. The correlation between these estimates made by both methods as of 1916 is very close. That is due to the fact that no major discoveries had been made during the preceding 15 years so that there were no large fields in process of development to throw the estimates out of line. This was done by Santa Fe Springs, Long Beach and the other fields found during the next 6 years, and for awhile the two estimates were nearly 1,800,000,000 bbl. apart. During recent years, there have been few large discoveries so that the two methods of estimating reserves again show slight divergence.

It must be noted, however, that fields found during the past 3 years may provide some surprises and that the estimates for these years may be greatly increased.

Considering the two methods of estimating reserves as applied to California, the inventory method shows little variation in recent years due to the fact that development has, in the main, been orderly. Nevertheless, there has been a decline over the past 12 years of about 15 per cent in reserves, regardless of discoveries and production. The method of allocating reserves to the year of discovery shows a greater relative decline, indicating that the discovery of new fields is lagging far behind the discovery of new sands. The discovery rate itself shows great irregularity. Present production rates have been exceeded by discoveries in only 11 out of 56 years, or about 1 year in 5. The failure to find fields of major importance during the past 3 years is therefore not significant in the over-all picture. It is interesting to note, however, that nearly half of the good years came between 1919 and 1924 and this period represents the peak of California discoveries so far as we now know.

To summarize the evidence presented regarding the two methods, the method of allocating reserves to the year of discovery tends to give results which run a few years ahead of the inventory method. It also tends to show high reserves in some years with more rapid declines. Later events may cause revisions of the old estimates, extending back, in some cases as much as 60 years and the books cannot be closed for any year until the last barrel of oil has been withdrawn from all fields discovered during that year. The divergences become less, however, as production gets into the settled stage unless a new method, higher price or some other factor permits a blanket increase. Because of the irregularity of the date of discovery of major fields, the trend of discoveries can be shown only vaguely.

On the other hand, the inventory method, by reason of its revisions, may present a false idea of security. If reserves keep pace with production and that progress is due mainly to revision of old estimates, our discoveries are not by any means keeping pace with our withdrawals.

It is thus necessary to prepare estimates by both methods so that we can recognize at least two danger signals. The first comes when the two estimates approach one another as they do in California today. That is a signal that more exploration is needed to maintain our future position. The second signal comes when the inventory method shows a decline in years' supply of available oil below a certain level. In previous articles, it has been shown that under present conditions this is 13 years' supply. At this point, optimum production begins to be exceeded. At 11 years' supply, a scarcity level appears.

TABLE 1—RELATIONSHIP BETWEEN DISCOVERIES AND RESERVES IN CALIFORNIA

(In millions of barrels)

Year	New reserves discovered	Production	Remaining supply	Estimat'd reserves as of end of year
1885-89	604	3	602	....
1890	0	....	602	....
1891	0	1	601	....
1892	67	1	667	....
1893	0	1	666	....
1894	3	1	668	....
1895	0	1	667	....
1896	0	1	666	....
1897	185	2	849	....
1898	27	2	874	....
1899	366	3	1,237	....
1900	0	4	1,233	....
1901	1,111	8	2,336	....
1902	0	14	2,322	....
1903	209	24	2,507	....
1904	0	30	2,477	....
1905	0	34	2,443	....
1906	0	33	2,410	....
1907	0	40	2,370	....
1908	0	48	2,322	....
1909	161	58	2,425	....
1910	63	78	2,410	....
1911	101	84	2,427	....
1912	114	90	2,451	....
1913	0	98	2,353	....
1914	0	104	2,249	....
1915	0	90	2,159	2,190
1916	405	92	2,472	2,166
1917	158	98	2,532	2,090
1918	0	103	2,429	2,061
1919	1,003	102	3,330	2,218
1920	411	106	3,635	2,454
1921	789	115	4,309	2,542
1922	127	140	4,296	3,193
1923	308	264	4,340	3,180
1924	240	230	4,350	3,142
1925	0	230	4,120	3,050
1926	107	224	4,003	3,037
1927	88	231	3,860	2,966
1928	702	232	4,330	3,800
1929	76	292	4,114	3,769
1930	0	228	3,886	3,616
1931	42	189	3,739	3,708
1932	513	178	4,074	3,530
1933	53	173	3,954	3,453
1934	133	176	3,911	3,315
1935	14	208	3,617	3,159
1936	165	215	3,667	3,152
1937	165	239	3,593	3,212
1938	503	250	3,856	3,338
1939	94	224	3,816	3,129
1940	11	223	3,504	3,215
1941	7	227	3,284	....

Speed is essential in joining your well and separator piping. Dresser Couplings guarantee you real speed, because they go together so simply and easily. No need to align pipe-ends perfectly. No worry if pipe lengths do not meet—Dresser connections span such gaps nicely. No need to take "time-out" to thread pipe. Speed your pipe-joining work—standardize on Dressers for all your well and separator piping.

DRESSER

MANUFACTURING CO., BRADFORD, PA.

THROW AWAY THAT BOTTLE OF ASPIRIN!

Your headaches will soon be over, if you'll start using No-Co-Ro balls & seats and drops & seats to whip that tough pumping job.

Pulling costs go down, your spirits come up — When you switch to NO-CO-RO.

NORRIS BROTHERS, INC.

ROBINSON, ILLINOIS

OFFER YOU THE CUMULATIVE EXPERIENCE OF 35 YEARS IN THIS SPECIALIZED SSERVICE

EQUIPMENT PROGRESS...

New Blackout Paint Is Distributed at Coastal Cities

A blackout paint for use in darkening windows and skylights of industrial and commercial properties where it would be impractical to extinguish lights at the sound of an air-raid warning, has been announced by American-Marietta Co., 43 East Ohio Street, Chicago.

The paint had been undergoing development in the company's laboratories for several months with the thought that it might, at some future date, find application in some outlying United States possessions. Final tests were speeded with the Japanese attack on United States possessions in the Pacific, and commercial production started 10 days later. First shipments were made to distributors on the Pacific, Atlantic, and Gulf Coasts.

The paint is being marketed in paste form, and, when cut 50 per cent with water, can be sprayed or brushed on windows to prevent all passage of light. Coverage is 800 sq. ft. to the gallon. It dries within 40 minutes, providing a flat surface that will not flash back or glare when hit by artificial light used within the room. In interior applications, a single coat may be covered with white paint where large glass surfaces make the higher reflection properties of a white surface necessary.

Removal of the product, termed Valdura Black-Out, is made without damage to the glass. It is being packed in 1 and 5-gal. containers.

Silver Anniversary Is Celebrated by Key Co.

December 15 marked the twenty-fifth anniversary of Key Co., East St. Louis, Ill., and it was observed by a series of conferences attended by all district representatives and department heads, and concluded with a banquet on December 18 at Missouri Athletic Club in St. Louis.

R. L. Dutton has been president of the company ever since its founding, and the late Fred E. Key, cofounder, was vice president in charge of production up to the time of his death 3 years ago.

The company's original product was a one-piece hand-hole closure cap for water tube boilers, and more than 6 million of these caps were produced in the course of the company's history. The Key hand hole cap was also adapted as a closure plug for the old Burton oil stills, and with the advent of high-pressure tube stills Key Co. originated and developed a line of return-bend fittings adapted for the more severe operating conditions required.

TRADE LITERATURE

WEATHERFORD SPRING CO., Weatherford, Tex.—A pamphlet describing in detail the application of their reversible scratchers on casing as an aid to cementing jobs of all kinds. Also, description is given of other Weatherford products, including the Weatherford cement-retaining basket, the spiral casing guide and straight casing guides.

EDWARDS VALVE & MANUFACTURING CO., East Chicago, Ind.—Catalog No. 12-G5, a new folder describing hard surfaced integral-seat globe stop valves for pressures to 1,500 lb. at 950° F. Carrying the tradename Intex (Integral Seat Valves of Extra Value) these globe valves are specifically designed for high-pressure and high-temperature service and incorporate many unique design features.

WAGNER ELECTRIC CORP., 6400 Plymouth Avenue, St. Louis, Mo.—A 34-page bulletin on single-phase, direct-current, and small polyphase motors manufactured by the company. It contains detailed descriptions of the construction of repulsion-start-induction motors, repulsion-induction motors, capacitor-start motors, split-phase motors, direct-current motors, small polyphase motors, fan motors, and explosionproof motors.

OIL WELL SUPPLY CO., Dallas, Tex.—Descriptive bulletins covering the following Oilwell products: No. 5 Pumping Jack; No. 101 Swivel, and TC-12C and TC-17L Twin-Crank Pumping Units.

Well Equipment Buys Oklahoma City Firm

Well Equipment Manufacturing Corp., world-wide distributor for the past few years of the patented Thompson fusible plugs and steam gage protectors, announces the purchase of the physical assets of Boiler Equipment Supply Co., of Oklahoma City, Okla. Lester O. Thompson, Boiler Equipment Supply Co. owner, died recently. All shop equipment has been moved to the Weco plant in Houston, Tex., where these products will be manufactured for exclusive supply-store distribution.

AMONG EQUIPMENT MEN

Young Radiator President Honored by Pi Tau Sigma

F. M. Young, president and founder of Young Radiator Co., Racine, Wis., was elected an honorary member of Alpha chapter of Pi Tau Sigma, honorary mechanical fraternity, at a formal initiation ceremony and banquet held at Memorial Union Building, University of Wisconsin, Madison, November 26.

Mr. Young was honored by the fraternity in recognition of having "done much to advance the profession and to encourage young men to do likewise." Each year the fraternity chapter selects one or two outstanding mechanical engineers who have, in addition to the above qualifications, also "attained the goal to which they aspire."

Duncan Succeeds Campbell With Waukesha Motor

George A. Duncan, for the past 8 years assistant branch manager for the Waukesha Motor Co. at Tulsa, has been advanced to the position of manager to replace Arch F. Campbell, resigned.

Mr. Duncan entered the oil industry more than 15 years ago with the Barnsdall Oil Co. in Tulsa. Later he entered the machinery business with the C. F. Camp Co. of Tulsa, one of the pioneers in this type of business, and as distributors for the Waukesha Motor Co. they were largely instrumental in the development of the internal combustion engine for drilling.

The growing demand for Waukesha engines in the oil field resulted in the establishment of a direct company branch in 1933 and Mr. Duncan joined Campbell's staff as assistant branch manager in September of that year. Mr. Duncan's many friends and wide acquaintance in the oil field, and his experience and knowledge of Waukesha products as well as the company's policies, insures to Waukesha engine users a continuance of those technical services, and cooperation which have made him and his company familiar to the entire trade.

BUSINESS NOTES

Allis-Chalmers Manufacturing Co. announced the appointment of A. Phillips as a resident salesman located at 2224 Liberty Street, Beaumont, Tex.

The Youngstown Sheet & Tube Co. announced the appointment of James E. Holmes as assistant manager of tubular sales with headquarters at Youngstown, Ohio. Mr. Holmes was formerly associated with the Republic Steel Corp., in Cleveland, Ohio.

FRANKS HONORS TEN-YEAR MEN . . .

Honor was accorded to eleven 10-year men at the Franks Manufacturing Corp. of Tulsa as a part of the firm's tenth anniversary celebration as the pioneer manufacturer of truck-mounted well-drilling and servicing units. H. H. Franks, left, president of the company, is shown making an award to Milt Rutledge, who started with Franks in July 1931. Other employes in the front row, are: Arthur Conwell, Edward Masek, Preston A. Pendergraft, Aaron A. Marlow, and Carl White, Jr., vice president and part owner. In the back row are: Mike Pallein, R. E. Kirberger, William Newhouse, James Turner, Jesse McPike and Bud Johnson.

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Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees"—FREE.

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Patent Law Offices
618 Bowen Bldg., Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES ROYALTIES
PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years Experience
Inquiries Invited
B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo

HAVE BLOCKED 25,000 acres on definite closed structure in Powder River Basin and need capital to further geologize and develop. Write or wire P. O. Box 1162, Casper, Wyoming.

FOR SALE: Oil and gas leases, small production, drilling propositions, fluorspar and rock asphalt deposits. Reports and maps furnished on request. W. P. Harley, Bowling Green, Ky.

MICHIGAN—1,160 acres to lease for Oil and Gas. Map free. Owner: L. J. Meldrum, 8354 Epworth, Detroit, Mich.

PROVEN oil land for lease. Grant District, Wetzel County, W. Va. In immediate vicinity of wells struck by Hope Natural Gas Co. & Carnegie Natural Gas Co. This land has been tried and proven. Also oil land in Ohio & Florida. For further information, contact Mr. M. Kohn, 654 Euclid Ave., Akron, Ohio.

PRODUCING PROPERTY FOR SALE

Three producing Devonian wells northwest of Centralia, Illinois. These wells are complete with pumping equipment, pipe lines, and tanks.

Detailed information on request.

B. L. Rucker — **Box 300** — **Ph. 375**
D. E. Wollner — **Box 205** — **Ph. 583**
Salem, Illinois

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

NEW Ordovician wildcat starting. Close in leases $1 to $2 per acre, chances for quick money. E. CROFT, PROCTOR, TEX.

70 Acres, Ector Co., Texas

2300 ft. from 12,000 bbl. well Sec. 16, Bl-42-2-S. Abstract up-to-date, Mrs. Mae Malone, owner. To be leased Immediately.

Make an offer.
Box 1334, Levelland, Texas

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The Philtower
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WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

FOR SALE: One-half royalty under 160 acres in central Kansas, semi-proven, under short time lease by major company. Duerksen, 301 West 12th, Newton, Kans.

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Incorporation

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guver, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla

Valuation Service

REGARDING YOUR OIL investments including Stocks, Bonds, Royalties, Leases, Oil Lands, Appraisals & Statistical Reports. Southwestern Research & Administrative Corporation, Tulsa, Oklahoma.

Business Opportunity

A LUBRICATING Oil and Grease business made 40% on selling price first nine months this year; will take $50,000 cash to handle. No debts. 10 year established business. Box A-742, The Oil and Gas Journal, Tulsa, Oklahoma.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma

Mailing Lists

ROYALTY owners, Oil investors, Unit holders, Stockholders, Operating personnel of oil industry. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Okla.

Situations Wanted

PRODUCTION OR FIELD SUPERINTENDENT: Age forty-seven. Eighteen years with two major companies. Thoroughly experienced in all production methods and rotary and cable tool drilling. Good organizer with broad knowledge of field operations. Can lower your development expense and lifting cost. Box A-800, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST, 28, married, Master's Degree, three years' experience in subsurface geology in U. S. and South America with major company, desires position as Geologist with either major or independent. H. T. Baldwin, Chestertown, N. Y.

Help Wanted

WANTED: Electrical Designing Draftsman specify materials, equipment and layout oil refinery distribution. Power and lighting circuits. Mostly classed one group D work. Present outlook permanent. Reply to P.O. Box 2527, Houston, Texas.

Help Wanted

DESIGNERS AND DRAFTSMEN

For Oil Refinery work carrying high priority ratings of A-1-A and A-1-B under

Government Defense Program

Must have experience in design of:

Oil Refinery Process Piping, Concrete and Structural, Oil Heating Furnaces, Pressure Vessels, Electrical Control and Light and Power Conduit Systems.

Can use several piping squad leaders. Must be thoroughly experienced.

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OIL REFINERIES
BLAST FURNACES
STEEL PLANTS
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MANUFACTURERS' Representatives known to the best oil field trade desired for quality specialties now being sold to the best oil field trade, repeat items, excellent commissions, exclusive territories open. Box A-811, The Oil and Gas Journal, Tulsa, Okla.

MIDWESTERN DISTRICT MANAGER
Leading nationally known accessory manufacturer operating in Diesel and internal combustion engine field wants District Manager to locate in Chicago.
Must have engineering background and proven sales record, preferably in midwestern territory and in Diesel field. Permanent connection for the right man.
Also opening in head office in East for sales engineering correspondent. Write giving full qualifications.
BOX A-810
The Oil and Gas Journal, Tulsa, Okla.

Equipment Wanted

FOXBORO Ratio Control; and 100 1-inch cast iron gas meters, like Sprague. Greenspon's National Stock Yards, St. Clair County, Ill.

HIGHEST cash prices paid for entire plants or individual production tools, milling machines, shapers, drill-presses, lathes, punch presses, electrical equipment and motors. Write us and a representative will call. COOK COUNTY MACHINERY CO., 1132 W. Lake St., Chicago, Ill.

WANTED to buy Bubble Tower 4 to 5 feet in diameter and 50 to 60 feet high. Desire ⅛ inch but would consider ⅜ inch material to stand 75# working pressure. Should have from 17 to 20 trays. Must be A-1 condition. Write or call E. C. Livingston, Danube Oil Corporation, Borger, Tex.

For Sale—Equipment

FOR SALE: Direct to operators for cash. No brokers. Casing, line pipe, fittings, tubing, rods, tanks, pull machines, powers, service masts, engines. C. T. Boone, Emporia, Kansas.

FOR SALE: 125 H.P. 200 W.P. Broderick Boiler, Code Condition, $975. Melton Supply Co., Seminole, Okla.

FOR SALE
Large quantity of secondhand low pressure natural gasoline plant equipment and fittings. Includes boilers, absorbers, heat exchangers, preheater, Permutit water treaters, etc. For details and prices address Coltexo Corporation, P. O. Drawer 1562, Monroe, Louisiana.

FOR SALE OR RENT: Gas engine powered Rotary Drilling Rig complete. Suitable for 4,500' drilling. Box 1360, Phone 312, Seminole, Okla.

FOR SALE at Oklahoma City: A quantity of repaired and unrepaired duplex piston steam pumps, 6 x 4 x 6 and 10 x 3½ or 4½ x 10. Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: Twenty-five tons of shafting. All sizes. Galoob Iron & Metal Co., Healdton, Oklahoma.

FOR SALE: 1—15 Ton Outside Derrick Crane Complete with hand-operated winch, 50' Mast, 40' Boom, good condition. Located at Seminole. National Supply Co., Tulsa, Okla., Ph. 2-8101, Box 1710.

DRILLING ENGINES

Used Waukesha and International, completely rebuilt.

IMMEDIATE DELIVERY FROM TULSA STOCK.

Also complete stock of new oil field flat belting.

TRAVCO EQUIPMENT CO.
105 N. Boulder — Tulsa, Okla.
Phone 3-6896

FOR SALE: Mast Type casing pulling machine, 50 ft. mast, complete drawworks, perfect working shape. Degen Pipe & Supply Co., 401 N. Boston, Tulsa, Okla.

FOR SALE: Two sets (8 each) cast heads for 8 cylinder, Superior diesel electric engine. Galoob Iron & Metal Co., Healdton, Okla.

FOR SALE

20,000' 12¾" O.D. lapweld pipe.
5,000' 7", 24 lb. seamless casing.
5,000' 2⅛" seamless upset tubing.
300 sets 3" tool joints, full hole.

Wire, write, or phone the

Louisiana Iron & Supply Company
Shreveport, Louisiana

FOR SALE at Oklahoma City -:- 1—1930 "35" Allis-Chalmers Crawler Tractor, $400.00. Patridge, Cities Service Oil, Bartlesville, Okla.

CORE DRILLING MACHINE

Built for shallow slim hole production work, 1250 ft. nicely; will handle deeper coring. Hydraulic type; will use up to 3 inch flush joint stem; Box derrick; ready to mount on truck chassis; $3,500. Ten other coring units, various sizes. Other equipment. Located Tulsa.

P. O. Box 980 — Phone 50-0249
Tulsa, Oklahoma

FOR SALE at El Dorado, Kansas: 1—1930 Model 10-20 McCormick-Deering Steel Wheel Tractor with Shaffer Front End Winch, $200.00. Patridge, Cities Service Oil, Bartlesville, Okla.

GRISCOMB-RUSSELL CONDENSER SECTIONS—SPECIAL OFFERING

2—Sections, C-240, single pass, bent tube, 88—1" OD X 18 ga. X 20' Admiralty, 125# pressure, 450° F., 470 sq. ft. surface ea.

1—Section, X-240, 3 pass, bent tube, 138—1" OD X 18 ga. X 20' Admiralty, 125# pressure, 450° F., 746 sq. ft. surface.

5—Sections, E-240, 8 pass, bent tube, retarders in tubes with ferrules, 16—1" OD X 18 ga. X 20' Admiralty, 125# pressure, 450° F., 87.3 sq. ft. ea.

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Robt. W. Duden
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Used Rotary Drilling Rigs

1—National Steam Rotary Rig complete with 4080 feet 5 9/16 O.D., 25.25 lb. A.P.I. interior upset seamless drill pipe.

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HUSKY REFINING CO.

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25 K.W. and 40 K.W. Gas Engines, 220 volts. D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.

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FOR SALE

40 new Reynolds Regulators ¼ Orifice ¾" Model 10—#1 Spring Type.
500 used #38—4½" OD Dresser Couplings.
115 used #38—6⅝" OD Dresser Couplings.
26 used #38—10¾" OD Dresser Couplings.

UNITED SUPPLY CO.
Public Service Bldg., Portland, Ore.

FOR SALE: 1 — F-M 4" Centrifugal Pump and 10 h.p. 1200 rpm. motor. One Viking ET 4" high pressure rotary pump with 2¾ to 1 speed reducing gear. One 4" Worthington high pressure rotary pump. Miscellaneous lot pumps and electric motors with starters. One Kinney Model SD 866 rotary pump, 6" connections, on base plate with extended shaft, outboard bearing and tight pulley. Priced to sell.
CORKEN PUMP & MACHINERY CO.
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A REAL BARGAIN!

8—24 yd. (or 74,600#) all steel DUMP CARS: one side discharge
Ideal for coke handling. Bargain!
OTHER DUMP CARS (air operated) TOO.

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36 years' experience
13412 S. Brainard Ave., Chicago, Ill.
"ANYTHING containing IRON or STEEL

FOR SALE at Oklahoma City: 5—Martin 8 Steel Rim Wood Wheels, Special High Speed, 25-30 Ton, Wagons with tractor hitch, $400.00 each. Patridge. Cities Service Oil Company, Bartlesville, Okla.

TRACTORS

Caterpillars, crawler type, size "35" $395; size "65" with nigger head winch $795.00; Austin Western hydraulic grader 10' blade $650. O. C. Evans, Mt. Sterling, Kentucky

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

FOR SALE: 5 x 12 Oil Well Power Slush Pump with 100 H.P. Waukesha Motor. Melton Supply Co., Seminole, Okla.

GAS-OIL CRACKING FURNACE
From
RODESSA REFINERY, Shreveport, La.

5,000 Bbl. CRACKING FURNACE, Alcorn type, 34' 0" x 36' 4" with Laclede-Christi suspended roof, arch, and wall, 4" common brick sheathing (air cooled side walls and floor) 12" air space between suspended walls and common brick. Transite roof and alloy tube sheets. Gas fired with 24 No. 16 Mettler burners. Contains the following alloy tubes: 218—3½" OD x 2⅝" ID Croloy DM tubes—1.00-1.50% Cr., 0.45-0.65% Mo., 31' 6" long. 182—3½" x 6¼" Key Series 7000 K4B headers, 2—3½" x 21" Key Series 7000 K4B headers, 8—3½" Key Series 7000 K4B corner fittings, 30—3½" extra heavy fittings, seamless weld end return bends.

ALSO

FROM BUTANE FURNACE

120—3½" x 2⅝" ID Croloy tubes—Composition same as above.
80—3½" x 6¼" Key Series 7000 K4B headers.
9—3½" Key Series 7000 K4B corner fittings.
34—3½" x 6¼" Beaird Screw type C. S. headers.
2—2½" Beaird Screw type C. S. corner fittings.

FURNACE BLUEPRINTS ARE AVAILABLE

BROWN-STRAUSS CORPORATION

At (Cedar Grove) Shreveport, La.
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Main Office: Kansas City, Mo.
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Sucker Rods, once run, in Okla. City field. Complete stock ¾", ⅞" and 1", available in truck loads of 10,000 ft. or more. These rods all alloyed. Delivered at reasonable point. Stock carried at Oklahoma City and Wichita, Kan.

MIKE TRAVIS
1702 S. Boulder Tulsa, Okla.

FOR SALE: International Diesel Motor U.D.-18. Almost new, complete with outboard bearing, pulley and belts. Adair-Morton Company, Wichita, Kansas.

FOR SALE: Pressure Vessels handling 100 pounds working pressure 8' diameters 31' 8" lengths. Steel smoke stack dismantled practically new self supporting 126' high 9' diameter. Shipments made same day purchased. Harvey Bros., 706 Rudd, Canon City, Colo.

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OIL STORAGE TANKS

3—55,000 Bbl.
1—25,000 Bbl.
5—10,000 Bbl.
3— 5,000 Bbl.
4— 2,500 Bbl.
1— 1,000 Bbl.
2— 750 Bbl.
2— 600 Bbl.
2— 1,200 Bbl. Agitators.
Can be inspected at
Middlesex Refinery Co.
Raritan, N. J.
Address your inquiries to

DULIEN STEEL PRODUCTS, INC.
2280 Woolworth Bldg.
New York, N. Y.
Tele—Cort. 7-4676

FOR SALE: Viking ET 4" high pressure rotary pump with 2¾ to 1 speed reducing gear. One 4" Worthington high pressure rotary pump. Miscellaneous lot pumps and electric motors with starters. One 6" deep well turbine pump, 250' of column and shaft, electric motor or belt head.
CORKEN PUMP & MACHINERY CO.
206 E. Grand Ave., Oklahoma City, Okla.

FOR SALE at Oklahoma City: Large quantity 65, 70, 75 and 85 hp. oil field boilers, repaired and unrepaired. Cities Service Oil Co., Bartlesville, Okla.

MISSISSIPPI AND SOUTHEAST

Wildcats Staked on Possible Wilcox Trend Extension

By R. MARNE SANFORD

JACKSON, Miss., Dec. 29.—During the past few weeks both new wildcat locations and general exploratory work have been on the increase in the Mississippi area. About 2 weeks ago the state was given two new wildcat locations while one was announced for the State of Georgia. During the past 14 days there have been five additional exploratory projects staked or announced for Mississippi.

In northern Hinds County, Carter Oil has staked the 1 Younger, located about 6 miles north of Jackson and in 35-7-n-1w. It is about a mile from an old 3,850-ft. failure that showed some oil when drilled in 1934. Also in Hinds County a new test is starting in an old gas-producing area which is now depleted. It will be E. F. Neely 1 Lerew, SE NW NW 15-5n-1e. In 1931 there were three tests drilled in the area, one of which was classed as a commercial gas producer for several years and another which is credited with having produced from 15,000 to 20,000 bbl. of crude oil before being abandoned.

Other recent operations in the state are as follows: Adams County, H. L. Simpson 1 Fairchild, SE SE 18-9n-2w; Hinds County, Plains Production Co. 1 Halifax Plantation Co., NE SW SW 1-7n-4w; and Warren County, Placid Oil 1 Anderson-Lully, SE SW 36-17n-5e.

In Madison County work has started on Phillips Petroleum Co.'s southeast offset to the Pickens-Sharpsburg discovery well by Buzz Morgan on the Johnny lands. The discovery was located in 4-11n-3e and production is from the Eutaw zone.

LEGAL

Department of the Interior, United States Land Office, Cheyenne Wyoming. Notice is hereby given that the oil and gas deposits in the following tracts are offered to the responsible qualified bidder of the highest bonus per acre for leasing, pursuant to the provisions of Section 17 of the act of February 25, 1920 (41 Stat. 437) as amended by the act of August 21, 1935 (49 Stat. 674) at the royalty rate scale in the lease form shown in Circular 1386, at a sale to be held in this office at 10:00 A.M., on January 22, 1942: South Oregon Basin field—Parcel No. 1, N½ N½ Sec. 5, T. 50 N., R. 100 W., 6th P.M., 161.50 acres; Parcel No. 2, W½ W½ Sec. 33, 160 acres; No. 3, NE¼ Sec. 32, 160 acres; No. 4, SE¼ Sec. 29, 160 acres; No. 5, SW¼ NE¼, S½ NW¼ Sec. 29, 120 acres; No. 6 SE¼ SW¼ Sec. 30, E½ NW¼ Sec. 31, 120 acres, all in T. 51 N., R. 100 W., 6th P.M.; North Oregon Basin Field—Parcel No. 7, SE¼ SE¼ Sec. 7, T. 51 N., R. 100 W., 6th P.M., 40 acres. The successful bidder must deposit on the date of sale with the Register, a certified check on a solvent bank, or cash, for one-fifth of the amount bid by him and file a showing of qualifications to receive a lease required by Section 7 of Circular 1386. The remaining four-fifths of the amount of the bid, together with the annual rental at the rate of $1.00 per acre must be paid, and a $5000 corporate surety bond furnished prior to the issuance of the lease. Bidders are warned against violations of the provisions of Section 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Register.

Journalisms:

WITH this issue a new department of the Journal makes its bow. We think it has been appropriately named, considering the nature of the lines that will fill it. Journalisms will appear on this page, as space permits, and the items here printed will take the reader behind the scenes, so to speak, of the editorial department. We'll tell you what's coming up in future issues; what readers have told us about what we've printed in previous issues, or perhaps give occasional background information about an author. We hope you'll like the column.

•

THIS week the editors received their annual surprise. The first issue in a new year we publish the annual index, listing the material that has appeared during the year. The Index starts on the opposite page. The surprise? Well, it's seeing just how much "copy" has passed over our desks in 52 weeks. Somehow, it takes a compilation such as this to make us realize the extent of our year's efforts. The titles listed in the following several pages have filled over 4,000 pages, or something, we estimate, over 7 million words—a sizable library on petroleum!

•

WE said above that we'd say something about what was coming up in future issues. With things as they are now in the oil business, that is running a risk of sticking our neck out. It used to be that we could pretty well plan next week's issue at the editorial-staff meeting on Wednesday morning. But that was before Washington assumed such vital importance, and before the war, and before everything in general was so topsy turvy. Now we are lucky if decisions at a midnight conference on Monday will stick until the book goes to bed. It is not at all unusual for a flood of telegraphed copy a few hours before press time to result in a complete change in our menu.

FROM where we sit it looks as if 100-octane aviation fuel, artificial rubber from petroleum gases, priorities, and cooperation with government agencies will continue to loom largely in oil news for some time to come. Not to mention the Axis' position with regard to oil, and its efforts to obtain more.

•

SPEAKING of Washington, our district editor in that city has jokingly suggested that we move our editorial offices there for the duration. He says the move is in order because so much oil news emanates from there. However, we don't contemplate such a step. The oil business is still run in the oil country, and it is in the oil country that news from Washington must be interpreted, pieced together, and made coherent. So we'll still keep on doing business at the same old stand.

•

EVERY week from 500 to 700 wells are completed in the United States. Most of these wells add so many barrels of oil or so many thousand cubic feet of gas to the available supply. Some of them find new sources of supply and others find merely information, which is of variable value. The field section's weekly chore is to present as complete a record of completions as it is possible to get and to fit the different types into the nation's oil picture. In moments of candor, the field department has been heard to admit that the job could be done better than it is now. You read it and our job is to give you the material you want to read. Are we doing it?

•

WHAT are our reserves and how may they be estimated are two questions which will probably take many years to answer. When we have it, the answer will be the result of much discussion. The Journal is inviting this discussion through its articles on reserves as well as estimates to be presented in the annual number.

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CALENDAR

January

SOCIETY OF AUTOMOTIVE ENGINEERS, annual meeting and engineering display, Book Cadillac Hotel, Detroit, Mich., January 12-16.

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division annual meeting, Engineers Building, New York, N. Y., February 9-12.

INDUSTRIAL SAFETY SECTION, fourth annual safety conference, Roosevelt Hotel, New Orleans, La., February 22-24.

AMERICAN PETROLEUM INSTITUTE, Division of Production, southwestern district, spring meeting, Adolphus Hotel, Dallas, Tex., February 26-27.

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, committee week and spring meeting, Cleveland, Ohio, March 2-5.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention and refiners and suppliers exhibit, Hotel Severin, Indianapolis, Ind., March 3-5.

AMERICAN PETROLEUM INSTITUTE, division of production, Pacific Coast district, spring meeting, Biltmore Hotel, Los Angeles, Calif., March 10.

WISCONSIN PETROLEUM ASSOCIATION, annual convention and equipment show, Schroeder Hotel, Milwaukee, Wis., March 18-20.

OKLAHOMA UTILITIES ASSOCIATION, annual convention, Biltmore Hotel, Oklahoma City, Okla., March 23-24.

WESTERN PETROLEUM REFINERS ASSOCIATION, thirtieth annual meeting, New Orleans, La., St. Charles Hotel, March 23-25.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, spring meeting, Houston, Tex., March 23-25.

AMERICAN PETROLEUM INSTITUTE, division of production, Mid-Continent district, Mayo Hotel, Tulsa, March 26-27.

April

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, William Penn Hotel, Pittsburgh, Pa., April 9-10.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Cincinnati, Ohio, April 15-17.

NATIONAL PETROLEUM ASSOCIATION, thirty-ninth semiannual meeting, Cleveland, Ohio, April 16-17, 1942.

SOUTHWESTERN GAS-MEASUREMENT SHORT COURSE, Norman, Okla., April 21-23.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-seventh annual meeting, Cosmopolitan Hotel, Denver, Colo., April 21-24.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Washington-Youree Hotel, Shreveport, La., April 22-24.